THE Soybean Digest

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EDITOR'S DESK

Margarine Has Gone Domestic

Of major significance to the soybean industry is the story on page 19 of this issue, announcing that the margarine manufacturers of the nation have committed themselves to using only domestically produced fats and oils in their products.

Long advocated by the American Soybean Association, and covered in resolutions adopted at all national conventions of the American Soybean Association since 1940, this forward-looking step should make many friends for the margarine industry.

During the war years the margarine manufacturers have, of course, had no choice but to use domestic cottonseed, soybean, peanut and corn oils. No imported supplies of edible oils were available. Not nearly so bad as they had always made them out to be, the domestically produced fats and oils did a bang-up job of producing a quality product which was readily accepted by the American housewife. Now that the margarine manufacturers have committed themselves we will expect them to abide by their decision. If they do, restrictions on the manufacture and sale of their product should be much more easily lifted during the next decade.

Fighting for the lifting of Federal taxes and restrictions on the sale of margarine, as has been carried on by the board of directors of the American Soybean Association over a period of years, has not been too satisfying when we were never sure that once the restrictions were lifted the margarine manufacturers would not revert to their former sources of supply. For years we have fought for removal of restrictions on only margarine produced from domestic fats and oils. The National Association of Margarine Manufacturers has now committed itself and its members to that policy. Wholehearted cooperation should be much easier from here on out.

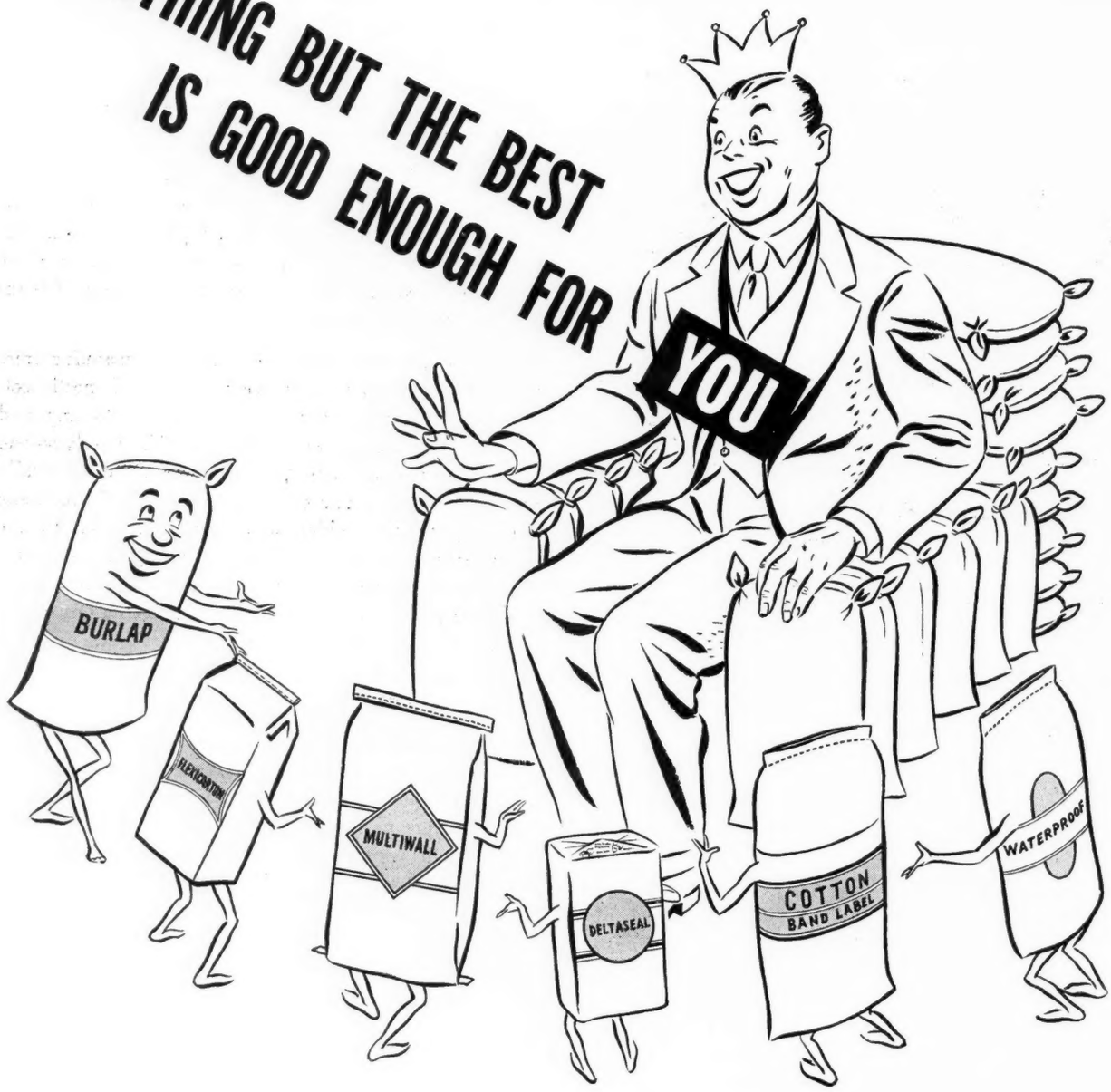
Protein Shortage Will Continue

Apparently there will be no relief from the shortage of protein supplies in this country until the 1947 crops are harvested. It now appears that during the coming feeding season we will see smaller quantities of proteins available than during the past year.

The peanut acreage this year is down. While peanut meal is used in livestock feeding in only minute quantities, it is a factor in the market. Flax acreage in 1946 is far below previous levels, thereby limiting the linseed meal supplies. Other countries have outsmarted our governmental agents in attempts to purchased flax outside the United States, hence there will be little if any imported this year. The cotton acreage is one of the smallest since 1921, and crop prospects are not too encouraging.

Everything points to one fact—soybean oil meal will have to supply the major portion of the protein meal needs

NOTHING BUT THE BEST IS GOOD ENOUGH FOR YOU



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of the nation during the coming year. When the government decided to increase the production of cereal grains in order that we might feed the world—at the expense of domestic oilseed crops—it anticipated substantially increased imports of oilseeds from foreign countries. To date those imports are not materializing.

Our 1946 soybean acreage is down—other protein crop acreages are down—total supplies are going to be considerably less than a year ago. Supplies of corn will apparently be greater, but the economy of feeding will be reduced by the lack of proteins to supplement the starches. The supply of soybean oil meal to be available on open markets seems destined to be the shortest in years, due to the fact that many more soybean processors are going into the mixed feed business and that many more feed manufacturers are going into the soybean processing business through the acquisition of established plants.

Accurate predictions within the feed industry are, of course, hazardous at this writing. For several years proteins have been the "bargain-counter" commodities of the feeding trades. There are many conflicting factors which tend to obscure the true supply and demand relationship. No true equilibrium has existed between the supply and demand factors for a number of years, and only time can re-establish it. The world is hungry for vegetable protein, and certainly there will not be sufficient supplies available to meet the demands in 1946-47.

Obviously, a factor which can not be predicted and which will have tremendous effect, is the action of the Decontrol Board, and the announcement which it will make on August 20 pertaining to ceiling prices on soybeans and soybean commodities. Your guess is as good as ours. . . .

Our 26th Session

Big news in the soybean world this month, while we await the maturity of the 1946 crop, is the 26th annual convention of the American Soybean Association at St. Louis August 29, 30 and 31. Program and details are carried elsewhere in this issue. The first meeting of the leaders of the soybean industry in two years, the 1946 session assumes new importance when viewed in the light of the problems confronting the industry in shifting from the wartime to the peacetime basis. You'll enjoy the discussions and addresses—the meetings with men from throughout the world—the behind-the-scenes sessions with those who have allied interests in the soybean world.

Just in Passing . . .

Sunflowers have interesting possibilities for human food and other purposes. See the article by our good friends at the University of Illinois in this issue. . . The Soil Conservation people are doing work that is important to soybeaners and others. R. E. Uhland tells why all the soybean plant except the seed should be returned to the soil. . . In many localities soybean crop prospects are the best in history. Weather prophets said it wasn't in the cards to have another good crop year. But here it is. . . .

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NEW YORK MEMPHIS DALLAS

Small plot of Canadian Mandarin soys in France. Such plots are known as little cultures. Great cultures are fields of one-half acre or larger.

The Culture of Soya in France

Soybeans have been an object of interest in France much longer than in the United States. They were being grown in the Royal Garden at Paris over 200 years ago.

Soy sprouts were furnished to the Parisian markets in 1875. In 1900 French physicians were prescribing soy bread for diabetics. Prior to the first world war a Chinese scientist was running a small factory near Paris which manufactured such soy foods as oil, flour, milk and cheese.

Books and articles on soybeans have been published in France for years. During the first world war Am. Matagrin was collecting all the information he could find on soybeans in the English, French, German, Italian and Spanish languages. In 1936-38 he was growing a large number of varieties from different countries in Choutagne.

Many varieties from America and other countries have been tried out in France, and numerous French selections have been developed.

But in spite of all the effort by enthusiasts there was little general interest in soybeans until France was defeated by Germany in 1940 and began to go hungry. Then an excessive interest in the crop developed. But most attempts to grow soys were ill advised and failed.

German and Italian looting recalled the Voltarian precept, "Cultivate your garden," to the minds of improvident Frenchmen. They cultivated even the parks, and grew cabbages in the Luxembourg! To obtain sugar, they experimented with sorghum, Jerusalem artichokes and Brazilian pumpkins. For oil and protein they tried soybeans and sunflowers.

Newspapers carried extravagant accounts of the returns that might be obtained from soya. People quickly bought out editions of books on soybeans by Matagrin and the author Rouest. (The puppet Vichy government prohibited reprinting of Matagrin's

(*Continued on page 16*)

A portrait of Am. Matagrin, who has been interested in soys since the first World War.

• *Information concerning the status of the soybean in France used in the accompanying article was kindly supplied us by Am. Matagrin, formerly scientific librarian at Lyons and technical adviser to the National Soya Center. Mr. Matagrin is author of* La Culture du Soja *and other books.*

CASE HISTORY No. 7

One in a series of factual experiences of a group of American manufacturers with Multiwall Paper Bags.

COST COMPARISON

	50 lb. Open Mouth Burlap Bags	50 lb. Multiwall Paper Valve Bags
Bag cost per M	$129.55	$86.80
Bag cost per 50 lbs.	.129	.086
Labor cost per 50 lbs.	.013	.007
Total bag and labor cost per 50 lbs.	.142	.093
Saving per bag paper over burlap		.049
Saving per ton paper over burlap		1.96

DETAILS OF LABOR COSTS

	Production per Hour	Cost per 50 lbs.
Burlap bags		
1 man filling, weighing, closing and handling at 80¢ per hour	3000 lbs.	.013
Multiwall Paper Valve Bags		
1 man filling and handling at 80¢ per hour	6000 lbs.	.007

CLASS OF PRODUCT PACKED

CEMENT	FERTILIZER
CHEMICALS	FOOD ✔
FEEDSTUFFS	MISCELLANEOUS

PRODUCT CHARACTERISTICS

ABRASIVE	GRANULAR
CORROSIVE	HEAVY
DELIQUESCENT	HYGROSCOPIC
FLUFFY	LIGHT ✔
FREE-FLOWING ✔	VISCOUS

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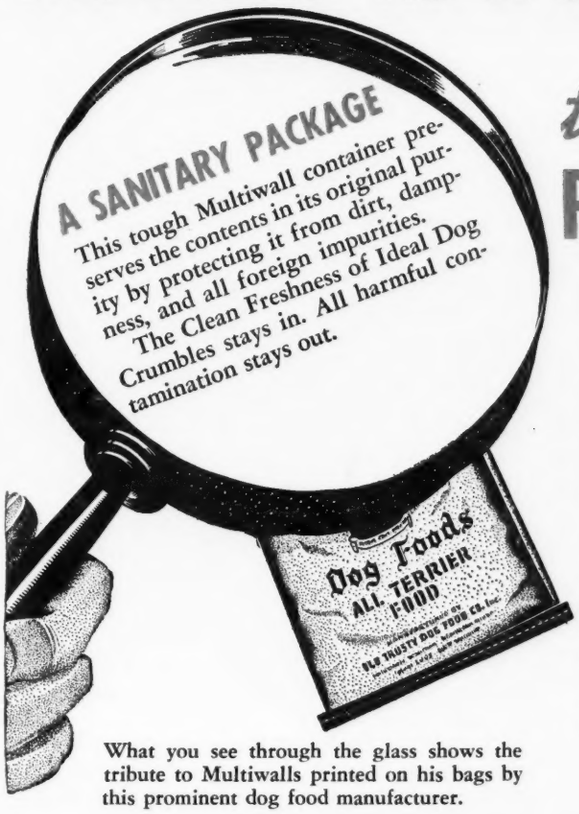
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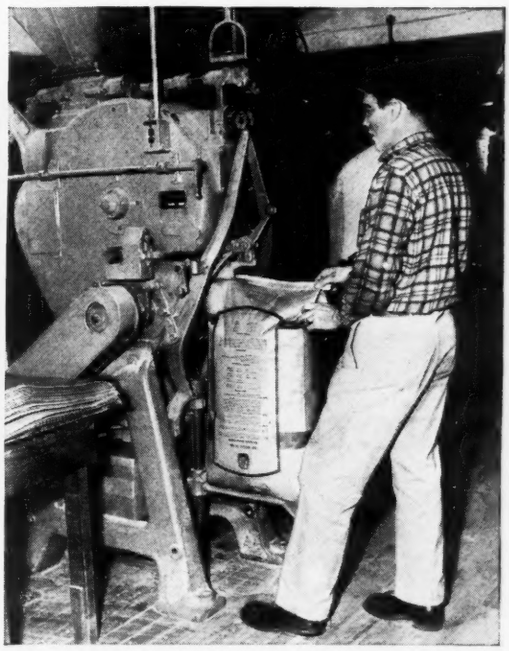

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Soybeans planted on the contour produce more hay and beans per acre than where planted up-and-down-the-slope and erosion is much reduced.

SOYBEAN Residues Reduce Erosion

*

And add valuable plant nutrients to the soil

*

By R. E. UHLAND
Research Specialist, Soil Conservation Service

SOYBEANS may be handled so as to be a help in maintaining the productivity of the soil whether they are grown for hay or for seed. When soybean hay is fed and the manure is spread back on the land about 70 percent of the plant nutrients contained in the hay is returned. Little consideration has been given, however, to the plant nutrients contained in the soybean leaves, stems, and roots or to the protection they can give to the soil against erosion if returned to the soil when the crop is harvested for seed. Growers therefore should be concerned with returning to the soil as much of the nitrogen gathered from the air and as much of the mineral matter taken from the soil by the soybean plants as is economically possible.

Early investigational work on the analysis and yields of the different plant parts were carried on by the author at the Missouri Agricultural Experiment Station, and by H. L. Borst and L. E. Thatcher at the Ohio State Agricultural Experiment Station. The findings are reported in *Missouri Agricultural Experiment Station Bulletin 279*—February 1930, and *Ohio Agricultural Experiment Station Bulletin 474*—November 1931. The analysis reported covers 4 years' work at Missouri and 6 years' work at Ohio. The data given supply us with a good basis for determining the value of different parts of the soybean plant when returned to the land.

Table 1. Pounds per acre of nitrogen in roots, leaves on plants and on ground, stems, and pods of Virginia soybeans at different stages of maturity. (Two years' results at Columbia, Mo.)

Stage of Maturity	Roots	Leaves on Plant	Leaves on Ground	Stems	Pods	Total Plants
4 wks. before maximum harvest ...	2.6	45.2		14.2		62.0
2 wks. before maximum harvest..	3.8	58.5		23.7	24.6	110.6
Maximum harvest	3.7	31.1	19.1	19.2	46.3	119.4
2 wks. after maximum harvest	2.4	13.7	17.6	16.3	57.1	107.1
4 wks. after maximum harvest	2.2	6.3	14.8	13.3	69.9	106.5

Table 2. Pounds per acre of principal plant nutrients found in leaves, stems, pods, and seeds of Manchu and Peking soybeans. (Average for two varieties for 4 years at Ohio Agricultural Experiment Station.)

Plant Nutrients	Leaves	Stems	Pods	Seeds	Total Tops
Calcium	57.5	14.6	11.4	2.2	85.7
Magnesium	25.2	12.1	6.5	2.3	46.0
Potassium	29.3	16.2	15.7	18.6	79.8
Phosphorus	7.3	3.3	2.6	9.8	22.9
Nitrogen	55.3	17.6	21.8	78.5	173.1
(Dry Weight Plant Parts	2333	1655	1046	1046	6080)

Soybean varieties differ widely in their time of maturity, character of stem and leaf, and their adaptation to length of season. Some varieties have numerous branches, others few branches. The Missouri studies were continued from 1925-1928 with the Virginia variety grown on two different types of soil. The studies at Ohio were started in 1922 and continued until 1927, but were not reported until November 1931. The latter investigations were made on the Manchu and Peking varieties.

NITROGEN IN ROOTS

The nitrogen determinations made on the various parts of the plants harvested at different stages of maturity made it possible to measure the total yield of nitrogen for the different harvests and also to determine its location in the plant. The nodule counts and root analyses gave an index of the nitrogen fixing activities of the crop.

As indicated by Table 1, the amount of nitrogen found in the roots was quite low, averaging less than 4 pounds per acre. This indicates that if much nitrogen is to be added to the soil, it is necessary to return more than just the soybean roots. Cutting the hay at time of maximum harvest would have removed 115.7 pounds of nitrogen per acre. At the last harvest, when the seed was mature, most of the leaves had fallen, and they had lost some of their nitrogen. If the beans had been harvested with a combine there would have been from 40 to 45 pounds of nitrogen returned.

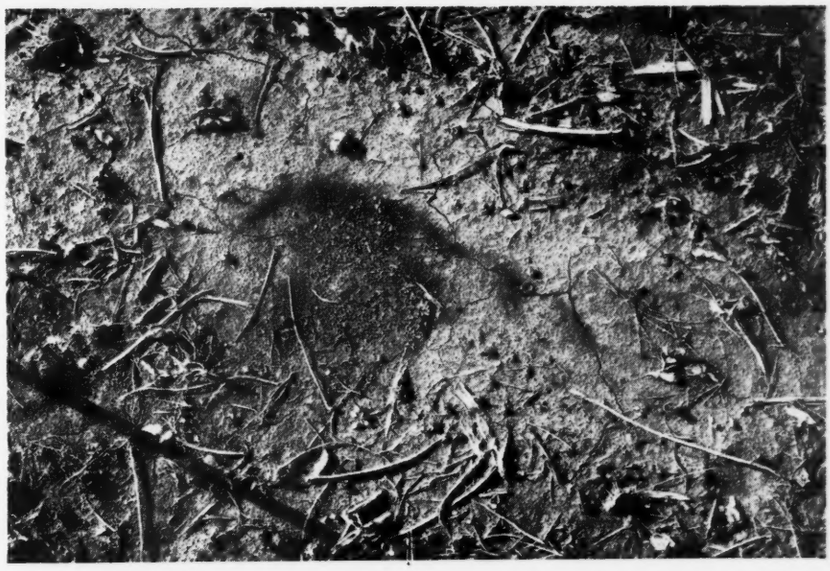
The maximum yield of nitrogen in the tops for 1928 was 134 pounds per acre when drilled solid, and 101 pounds for soybeans planted in rows and cultivated. In 1927 when soybeans were grown as a catch crop, the hay contained 57.2 pounds of nitrogen when drilled solid, and 35.8 pounds when cultivated.

Assuming that all the nitrogen contained in the dropped leaves would have been returned to the soil, and that 70 percent of the nitrogen in the harvested hay would have been returned in the manure, there would have been a return to the soil of 71.8 pounds in the cultivated crop of 1925, 107.5 pounds in 1926, and 93.8 pounds in 1928. It was calculated that slightly more than half of this nitrogen came from the air. By combining the soybeans for seed, it was estimated that there would have been a return of 51 pounds of nitrogen in 1925, 67.5 pounds in 1926, and 63.5 pounds in 1928.

LESS NITROGEN AS PLANTS MATURE

The investigations of H. L. Borst and L. E. Thatcher at Ohio showed that earlier sowing dates for the Manchu and Peking varieties were more conducive to higher yields of seed than forage. Hughes and T. E. Wilkins at the Iowa Station at Ames reported similar findings.

Table 2 shows the average pounds per



(Above). Bare soil surface when soybeans were harvested for hay; no residue returned nor cover crop planted. (November 14, 1941, Urbana, Ill., C. A. Van Doren.)

(Below). Soybean seed was harvested from this land and all the residue returned. (November 14, 1941, Urbana, Ill., C. A. Van Doren.)

Soybean residue present on the soil surface. The residue was very effective in reducing both runoff and erosion from a 1.75 inches per hour storm. (April 17, 1942, Urbana, Ill., C. A. Van Doren.)

acre of the principal plant nutrients found in the soybean leaves, stems, pods, and seeds for the Manchu and Peking varieties. Maximum yields of nitrogen were obtained while the seeds were forming in the pods and before many leaves were lost. As was the case at Missouri, the nitrogen in the stems and leaves decreased rapidly as the plants matured. Part of this decrease was due to the movement of nitrogen from the stems and leaves into the seed while the rest was returned to the soil. The data shown in Table 2 were secured when the soybean plants had matured and when more than 45 percent of the nitrogen was in the seed.

WHEN STRAW IS BURNED

At maturity, if only the seed had been harvested, about 94.5 pounds of nitrogen would have been returned to the soil. If all the hay and seed had been taken off the land, it would have represented the removal of 85.7 pounds of calcium, 46 pounds of magnesium, 79.8 pounds of potassium, 22.9 pounds of phosphorus, and 173.1 pounds of nitrogen per acre. If only the seed had been harvested, however, the average losses would have been 2.2 pounds of calcium, 2.3 pounds of magnesium, 18.6 pounds of potassium, 9.8 pounds of phosphorus, and 78.5 pounds of nitrogen. This emphasizes the loss, especially of nitrogen and organic matter, when the soybean straw is burned or is not returned to the land.

L. E. Thatcher, of Ohio, found that for an average of 6 years, soybeans cut about the middle of September contained 7 pounds of nitrogen per acre in the roots, as compared with 4.9 pounds when harvest was delayed until the first week of October. For the September harvest, 39.1 pounds of nitrogen per acre was in the leaves, 14.7 pounds in the stems, 12.6 pounds in the pods, and 51.6 pounds in the seeds. When the harvest was delayed 2 weeks, 19.7 pounds of nitrogen was found in the leaves, 9.9 pounds in the stems, 10.1 pounds in the pods, and 72.1 pounds in the seeds.

It is apparent that much of the nitrogen moves from the stems and leaves into the seeds. It is difficult to determine the extent of this movement, because of leaf dropping as the soybeans approach maturity. The 6-year average showed that the amount of phosphorus removed by the crop harvested in either middle September or the first of October was 30 pounds of P_2O_5, equivalent to 150 pounds of 20 percent superphosphate. The amount of potassium removed by the crop on these two harvest dates was 39 to 41 pounds of K_2O, equivalent to 78 to 82 pounds of muriate of potash.

It is generally recognized that a crop of soybeans leaves the soil loose. Observations and experiments have shown that the soil erodes easily following the removal of the crop, especially when it is cut for hay. C. H. Van Doren and R. S. Stauffer reported on the effects of crop and surface mulches on runoff and soil losses on a 4 percent slope at Urbana, Ill., in Volume VIII of *Soil Science of America* in 1943.

The experiment showed that when artificial rainfall was applied to clean-cultivated soybeans at the rate of 1.75 inches per hour on a 4 percent slope, the runoff was practically constant after the second hour. The runoff at the end of the first hour in April 1942 was 74 percent and in June 1942 was 85 percent. The soil loss for the first hour in April 1942 was 3,362 pounds per acre, and in June 1942 it was 4,881 pounds. At the end of 2 hours, 10,383 pounds of soil per acre had been moved off the plot, and 89 percent of the 1.75 inches of rainfall was running off.

Where the soybean residue consisting of all the plants except the seed was returned to the surface, the runoff at the end of the first hour for October 1941 was 47 percent and at the end of the second hour it was 62 percent. In April 1942, the runoff was 25 percent at the end of one hour and 47 percent after the second hour. The soil loss for October 1941 was 1,168 pounds per acre for the 2-hour period, and in 1942 it was 2,394 pounds.

STILL ACTIVE IN APRIL

Thus, it is seen that the soil loss for October where the soybean residue was returned was only 11.2 percent as great as where the residue was not returned. The residue was still active the next April, as the soil loss was 23.0 percent of the soil loss without the residue.

Use of early maturing varieties allows for early harvesting of the soybeans and the seeding of winter grains or cover crops earlier than is possible with late maturing varieties. Winter cover crops which have a week or more advantage, when conditions are favorable for rapid germination and growth, will generally produce much more organic matter and give better protection to the land. Late planted cover crops cannot be expected to give much protection against erosion in the fall and winter, and their growth the next spring is much behind those crops that have an early start and thus established a well-developed root system during the favorable growing season in early fall.

DELAY PLANTING

Erosion may be reduced further and more fertility saved by delaying the preparation of the land and the planting of the soybean crop a week or more in the spring. At this time of year, the growth of the hay or cover crop is very rapid, and the increase in organic matter may be measured in hundreds of pounds for every day that plowing is delayed.

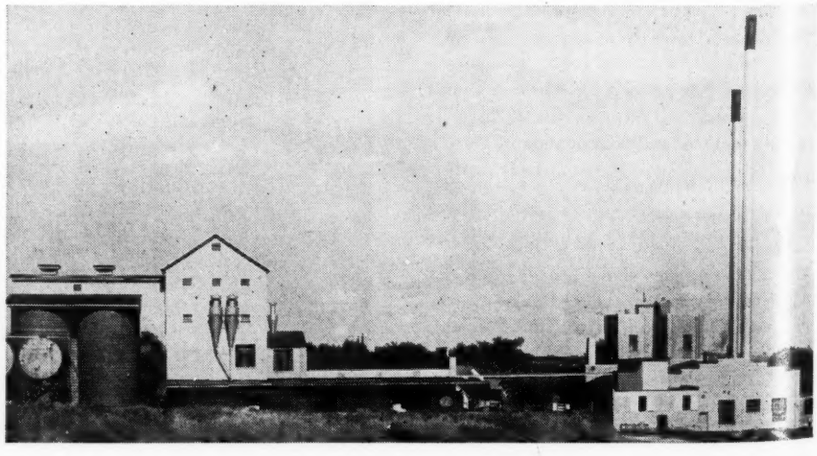
Additional savings of soil and fertility may be made by drilling the soybeans in 8-inch rows instead of 42-inch cultivated rows. Contouring is recommended for all sloping land whether the beans are drilled solid or planted in 42-inch rows and cultivated.

From these runoff and soil loss data it is obvious that by returning the leaves, stems, and pods of the soybean plants to the soil surface a large saving of soil and water will result. The soil loss from land where the soybean hay was removed and the land left bare was 129 times as great as where it was mulched with 2 tons of wheat straw. By removing only the soybean seed and leaving all the leaves, stems, roots, and pods on the land, more than half of the nitrogen contained in the soybean plant is returned, and erosion is also markedly lessened.

Central Farm Products Co. Plant

Below at right is the new soybean plant of the Central Farm Products Co., Trenton, Mo. There is produced the soybean oil meal to feed the dairy cattle that supply the milk plant at left. The plant uses a new type French press.

—American Miller & Processor.



"KNOW YOUR OILSEEDS" ● *Fourth in a series of articles concerning oilseed crops which compete with soybeans. Articles on cottonseed, peanuts and tropical oilseeds have appeared in previous issues.*

SUNFLOWERS

BY R. O. WEIBEL AND W. L. BURLISON[1]

MOST people are acquainted with the sunflower plant and have seen it grow as an annual weed pest, as an ornamental, or as poultry feed and shade. Though we may not have rated it very highly as a farm crop, it is a source of food for both man and animal. It is one of the few native commercially grown crops in the United States.

Early settlers in this country found the Indians cultivating sunflowers, and using the seed as food and as a source of oil. The oil was used as food and also as a fuel.

Since that time the culture of sunflowers has spread over many parts of the world. Russia, for example, has made a very intensive study of the plant and through breeding and the development of improved strains, the sunflower became one of their important oil crops. Some of these strains are finding their way back to the United States.

Other European and certain South American countries are growing considerable acreages to furnish the much-needed vegetable oil. Experiment stations in Canada have conducted many experiments on the breeding and culture of sunflowers. They have encouraged the growing of sunflowers for the production of oil and meal.

In the United States, many agricultural experiment stations have conducted research on sunflower culture. This research was concerned chiefly with the value of this crop as silage, but some data were also obtained on seed production and on insect and disease problems. War emergency needs stimulated interest to review or bring up to date the possibilities of the sunflower as a seed crop. A few individuals and concerns have contributed to the advancement made toward uses of the seed and its products—oil and meal.

1/R. O. Weibel, assistant chief in crop production and plant genetics and W. L. Burlison, professor of crop production and head of department of agronomy, University of Illinois, Urbana, Ill.

PRODUCTION

California, Illinois and Missouri have grown the bulk of the seed produced in the United States. Production figures for these three states by 5-year periods are shown in Table 1. Total production in pounds has decreased for each 5-year period since the 1924-28 average. In the last decade production has shifted from Illinois and Missouri to California.

The 1924-28 figures show that California produced only 20.1 percent of the total pounds reported whereas Illinois produced 47.9 percent. For the last 5-year period (1939-1943), California produced 83.3 percent of the total as compared to 3.5 percent for Illinois. This shift can be partially explained by the fact that California has a more favorable harvesting season. Good quality seed is obtained more consistently there than is the case in Illinois or Missouri. Thus the demand for high quality seed is being met by the California growers.

VALUE OF SEED, OIL AND MEAL

There is a wide fluctuation in prices paid to growers for their seed. Due to the limited demand for seed, it has been quite easy to produce more than can readily be used. When this is true the price goes down. As a result, farmers plant a smaller acreage and with subsequent low production the following season prices rise to an attractive level again. Prices (delivered in St. Louis) have ranged from $1.25 to $15.00 per 100 pounds. The prevailing price was around $2.50 to $3.50 per 100 pounds when the demand and supply were equalized.

Table 1
Sunflower Seed Production in the United States*

Five-Year	Production — Pounds				% of Total Production		
Averages	Calif.	Ill.	Mo.	Total	Calif.	Ill.	Mo.
1924-28	2,005,000	4,779,800	3,195,400	9,980,200	20.1	47.9	32.0
1929-33	2,410,000	2,248,000	990,000	5,648,000	42.7	39.8	17.5
1934-38	3,812,000	536,000	986,000	5,334,000	71.5	10.0	18.5
1939-43	3,330,000	141,000	526,400	3,997,400	83.3	3.5	13.2
20-Year Average 1924-43	2,889,250	1,926,200	1,423,450	6,239,900	46.3	30.9	22.8

*Data for this table were taken from the Agricultural Statistics, United States Department of Agriculture published for the years 1935 and 1944. Production figures are given for only these three states.

Recent interest has stimulated the production of sunflower seed for the oil and meal that can be obtained from it. The seed as it comes from the threshing machine or combine contains from 25 to 35 percent oil. This oil is a fine-flavored, high-quality oil and is used in the manufacture of lard and butter substitutes, salad dressings, cooking oils, and soaps. It is also used in the manufacture of paper, plastics, glues, and as a drying oil in paints and varnishes. There is a steady demand and ready sale for the oil.

The meal is high in protein of a high biologic value. (Table 2.) Meal produced from hulled seed is valuable as a food for man. It has been given limited tests with excellent results and the possibility of using it in the human diet seems promising. The meal from unhulled seed competes directly with cottonseed, linseed, peanut, and soybean oil meal, and is interchangeable with them in livestock feeds.

Table 2. Comparison of the Protein Value of Sunflower Seed Meal With Raw Soy Flour*

Food Product	Protein Content %	Digestibility of Protein %	Biological Value of Protein %	Net Protein Value %
Sunflower Seed Meal	55.4	94.3	64.5	33.7
Raw Soy Flour	42.5	84.8	59.4	21.4

*Information in this table taken from data published by Dr. H. H. Mitchell and associates in The Journal of Nutrition, Vol. 29, No. 1, January, 1945.

CULTURE

The growing of the crop is very similar to the growing of corn, and offers no particular difficulties. Until recently, harvesting has been a handicap because most varieties are tall-growing types and not adapted to harvesting with the machines available. The harvesting used to have to be done by hand. The heads were cut off with a knife and thrown into a wagon. If not dry, the heads had to be spread out and given time to dry before they could be threshed. This meant handling the heads several times, and consumed many man hours.

Now there are dwarf or short-growing types which have been developed in Canada. These types can be harvested with the combine which is used for harvesting small grains and soybeans. A few minor adjustments on the combine are necessary. The major change is in the reel, which has to have solid blades to prevent their catching the heads and throwing them clear out of the machine. The blades can be made solid by using hardware cloth (¼" mesh), light sheet metal or light lumber. Other adjustments are slowing down cylinder speed and proper air and screen adjustments for cleaning seed.

VARIETY TRIALS IN ILLINOIS

The Illinois Agricultural Experiment Station has been conducting field experiments for several years, surveying the varieties available and studying their potentialities as seed-producing types. Yield data were obtained from three locations—Urbana, Dixon Springs, and Brownstown—for the 1943, 1944, and 1945 seasons. Yields are considerably lower for southern Illinois than for central Illinois, as is expected due to a lower fertility level.

Of the varieties listed, Manchurian, Grey Stripe, and White Hungarian are tall; Common, Black Russian, and Short Russian, intermediate; and Mennonite, Sunrise, and S-37-388 x Sunrise are short-growing types.

The tall group yielded, on the average, 210 pounds more per acre than the intermediate group, and 249 pounds more than the short group.

Of the short group, the single cross (S-37-388 x Sunrise) seems to be a very promising strain. This cross is made up in Canada, and the seed has not been available except in small experimental amounts. It has the oil content desired and the yield approaches that which is needed for the crop to compete with corn or soybeans in the Cornbelt area.

The 1945 yield data at five locations are presented in Table 3. These five locations indicate the response that might be expected on the better Cornbelt land of Champaign and Piatt Counties, the sandy land of Mason County, the tight clay of Fayette County, and the soils of southern Illinois in Pope County.

Several varieties were included in the 1945 test for the first time. S-791 is a very short, early type from Canada. It is too early for Illinois conditions and has a weak stem. Jupiter, Pole Star, and Arrowhead are in the intermediate group so far as height is concerned. Jupiter (Black Seeded) and Pole Star were obtained from Canada, and Arrowhead from Minnesota.

White Stripe and Black Russian (Mo.) are tall types and the seed was obtained from Missouri. One year's data are only an indication, but there appear to be some promising high-yielding strains in the intermediate group.

INSECTS AND DISEASES

There are many insects which attack the sunflower. Most of them are usually in small enough numbers that no great damage results. The seed weevil (*Desmoria fulvus*) is probably the most serious pest. This insect was one of the reasons for the rapid decline in acreage planted to the sunflower in Illinois. The acreage built up to a peak in 1928 and 1929, and these were also peak years for weevil infestation. As a result, practically no sunflowers were grown in Illinois for the next several years. No control measure or varietal resistance is known. The adult lays eggs in the flower, and the young hatch out in the developing seed. About the time the seed is ripe the larvae have reached maturity and they bore a hole through the seed case and drop to the ground where they over-winter. Late-planted and late-maturing varieties seem to be more vulnerable to the attack of the insect. Rotation of crops is advised.

As for diseases, one is *Sclerotinia* stalk rot which has been observed in the state, and which would do considerable

(*Continued on page 16*)

Table 3. Yields (Lbs./Acre) of 15 Sunflower Varieties Grown at Five Locations in Illinois in 1945

Variety	1944 Seed Source	Average Not Including Brownstown	Locations Where Varieties Are Grown: Urbana Champaign County	Cerro Gordo Piatt County	Havana Mason County	Dixon Springs Pope County	Brownstown Fayette County
S-37-388 x Sunrise	Canada	1,383.2	1,964.6	1,646.0	682.8	239.5	
White Hungarian	Illinois	1,227.2	1,799.9	1,616.5	1,188.9	303.5	1,036.4
Black Russian	Missouri	1,154 8	1,811.9	1,823.9	744.0	239.3	1,154.8
Common	North Dakota	1,115.8	1,911.0	1,657.6	576.1	318.5	741.5
Arrowhead	Minnesota	1,107.1	2,118.1	1,423.3	647.6	239.5	
Jupiter	Canada	1,102.3	1,819.1	1,577.1	730.8	282.4	585.5
Black Russian	Illinois	1,091.3	1,978.2	1,577.4	632.4	197.1	
Manchurian	California	1,088.0	1,727.1	1,710.3	561.3	353.4	1,260.1
Mennonite	Canada	984.4	1,518.4	1,432.3	726.8	260.0	
Pole Star	Canada	950.2	1,584.0	1,308.0	669.2	239.7	445.9
White Stripe	Missouri	949.4	1,420.1	1,413.5	622.4	341.5	
Grey Stripe	California	941.2	1,468.9	1,344.7	574.1	377.2	867.4
Short Russian	Illinois	880.7	1,676.0	1,288.3	402.6	155.8	
S-791	Canada	546.8	1,197.0	600.8	317.8	71.7	
Sunrise	Canada	540.2	1,143.4	849.9	72.0	95.9	
Difference for Significance		151.8	305.3	313.0	380.0	108.2	

COMMITTEES FOR ASA CONVENTION

Following are the committees which have been named to serve during the 26th annual convention of the American Soybean Association at St. Louis August 29-31:

Convention: Howard Roach, Plainfield, Iowa, chairman; Harry Plattner, Malta Bend, Mo.; Donald Walker, St. Louis; George Strayer, Hudson; and Jacob Hartz, Sr., Stuttgart, Ark.

Nominations: D. G. Wing, Mechanicsburg, Ohio, chairman; E. F. Johnson, St. Louis; W. J. Morse, Washington, D. C.; W. L. Burlison, Urbana, Ill.; and Jacob Hartz, Sr.

Resolutions: Walter McLaughlin, Decatur, Ill., chairman; K. E. Beeson, Lafayette, Ind.; G. G. McIlroy, Irwin, Ohio; Ersel Walley, Ft. Wayne, Ind.; and Harry Plattner, Malta Bend, Mo.

—s b d—

CONVENTION EXHIBITORS

Following is a partial list of firms who will have exhibits at the 26th annual convention of the American Soybean Association, at Hotel Jefferson in St. Louis August 29-31:

Seedburo Equipment Co., Chicago
National Association of Margarine Manufacturers, Washington, D. C.
The Albert Dickinson Co., Chicago
Butler Food Products, Cedar Lake, Mich.
Ralston Purina Co., St. Louis
Soybean Paint & Varnish Institute, St. Louis
Dixie Machinery Mfg. Co., St. Louis
The Nitragin Co., Inc., Milwaukee, Wis.
The Urbana Laboratories, Urbana, Ill.
Neff & Fry Co., Camden, Ohio
J. C. Kintz Co., Cedar Rapids, Iowa
Eriez Manufacturing Co., Erie, Penn.
Bemis Bro. Bag Co., St. Louis
Dave Fischbein Co., Minneapolis, Minn.
Fulton Bag & Cotton Mills, St. Louis
The Soybean Digest
V. D. Anderson Co., Cleveland, Ohio

THE AMERICAN SOYBEAN ASSOCIATION'S

26th Annual Convention

Hotel Jefferson, St. Louis, Mo., Aug. 29-31

PROGRAM

WEDNESDAY, AUGUST 28

3:00 p. m. Board of Directors Meeting.

6:00 p. m. Advance Registration, Mezzanine Floor. Nominations Committee Meeting Room No. 2

8:00 p. m. Informal Smoker, Room No. 1, Hotel Jefferson. All members of Industry Invited
Resolutions Committee Meeting Room No. 6

THURSDAY, AUGUST 29

8:00 a. m. Registration. Mezzanine Floor. Hotel Jefferson. Exhibits on Display in Ivory Room

9:00 a. m. Gold Room, Hotel Jefferson. Howard L. Roach, President American Soybean Association, Presiding

Address of Welcome, Lieutenant Governor Walter N. Davis, State of Missouri

"Place of Soybeans in Missouri Agriculture," A. W. Klemme, Extension Professor of Soils, University of Missouri

"Soybean Production Practice Summaries," J. W. Calland, Director of Agronomic Research, Central Soya Co., Inc., Decatur, Ind.

"Large-Scale Soybean Production," Henry I. Cohn, Valley Farms Co., Carrollton, Ill.

"Today's Knowledge of Soybean Diseases and Pests," Dr. William B. Allington, Pathologist, U. S. Regional Soybean Laboratory, Urbana, Ill.

"The USDA Soybean Disease Studies," Dr. W. J. Morse, Senior Agronomist, Bureau of Plant Industry, Beltsville, Md.

"The Southern Regional Soybean Variety Program," Paul R. Henson, Agronomist, Delta Branch Experiment Station, Stoneville, Miss.

12:00 m. Adjourn for Lunch. Exhibits on Display

1:30 p. m. Reconvene — Walter McLaughlin, Vice President American Soybean Association, Presiding

"Soybeans and the Fertility Level," Dr. A. G. Norman, Department of Agronomy, Iowa State College, Ames, Iowa

"German Oilseed Processing," Dr. W. H. Goss, Industrial Analyst, Northern Regional Research Laboratory, Peoria, Ill.

"Soybean Research at the Northern Regional Research Laboratory," Dr. G. E. Hilbert, Director, Peoria, Ill.

"Soy Flour: War Usage and Peace Prospects," A. E. Leger, Executive Secretary, Soy Flour Association, Chicago, Ill.

"Processor Plans to Improve Soybean Production," C. Kenneth Shuman, Chairman, crop production committee, National Soybean Processors Ass'n. Indianapolis, Ind.

"Feeding the World With Soya," Dr. H. W. Miller, President, International Nutrition Laboratory, Mt. Vernon, Ohio

8:00 p. m. St. Louis Municipal Opera or Moonlight Boat Ride on Mississippi. Tickets available at registration desk

FRIDAY, AUGUST 30

9:00 a. m. Annual Business Meeting, American Soybean Association

10:30 a. m. J. B. Edmondson, Clayton, Ind., Presiding

"The Growing Importance of the Soybean Crop in Our National and Agricultural Economy," Whitney H. Eastman, President Chemical Division, General Mills, Inc., Minneapolis, Minn.

"Soybean Oil—Its Future in Margarine and Related Products," N. B. Betzold, General Sales Manager, Durkee Famous Foods, Cleveland, Ohio

"World Trends in Major Oil Crops and Their Effect on Soybean Acreage in the United States," Peter L. Hansen, Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

"Soybeans and the World Fats and Oils Situation," Fred J. Rossiter, Head, Fats and Oils and Rice Division, Office of Foreign Agricultural Relations, U. S. Department of Agriculture, Washington, D. C.

12:00 m. Adjourn

1:30 p. m. Reconvene

"What Can We Do to Maintain and Expand the Soybean Industry?" Jasper Giovanna, Decatur Soy Products Co., Decatur, Ill.

"Soybeans in the UNRRA Program," Donald S. Payne, Food Technologist, Washington, D. C.

"The Years Ahead for the Soybean Industry," E. G. Strand, Agricultural Economist, Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

"New Developments in Feeding Soybean Oil Meal to Livestock," Dr. J. W. Hayward, Director Biological Research, Archer-Daniels-Midland Co., Minneapolis, Minn.

7:00 p. m. Banquet, Gold Room. Program to Be announced

SATURDAY, AUGUST 31

9:00 a. m.—4 p. m. Trip to Ralston Purina Experimental Farm, Gray's Summit, Mo. Transportation by Auto and Bus. Lunch Served by Hosts

8:00 p. m. Annual Meeting, Retiring and Incoming Boards of Directors.

They'll Speak at ASA Convention

W. J. MORSE

New faces and old favorites will appear on the program of the American Soybean Association Convention in St. Louis August 29-31.

Likenesses of a few of our speakers appear on these pages.

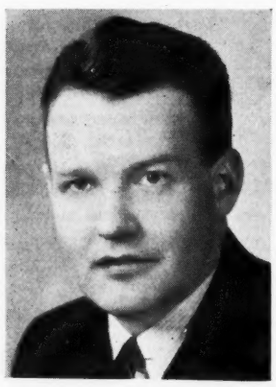
Dr. W. J. Morse, principal agronomist of the U. S. Department of Agriculture's Bureau of Plant Industry at Beltsville, Md., of course needs no introduction. His lifelong interest in and efforts for soybeans are well known to our readers. No ASA convention has ever been conducted without him.

Both Dr. Morse and Dr. W. B. Allington, pathologist of the U. S. Regional Soybean Laboratory, Urbana, Ill., will talk on the soybean disease program of USDA. Increased appropriations were granted by Congress and the disease program has been greatly expanded this past year.

W. B. ALLINGTON

Dr. W. H. Goss, as a member of the technical industrial intelligence committee of the Joint Chiefs of Staff, spent some months in 1945 making a study of oilseed processing in Germany, and will give a report on this subject. An industrial analyst for the Northern Regional Research Laboratory, Dr. Goss has appeared on ASA programs frequently.

W. H. GOSS



Whitney H. Eastman, president of the chemical division of General Mills, Inc., takes a positive view of the future of soybeans in the American economy. He has long been active in both the linseed and soybean processing industries and knows whereof he speaks.

WHITNEY H. EASTMAN

A MESSAGE FROM YOUR PRESIDENT

TO ALL AMERICAN SOYBEAN ASSOCIATION MEMBERS:

On August 29th our 26th annual convention will assemble at St. Louis. Present indications are that it will be one of the largest of our meetings. Since the 1945 session was cancelled because of war-time restrictions, this 1946 conclave assumes more-than-usual importance.

This is a critical time for the soybean industry. War-time stimulation is past, and war-time governmental controls are being lifted. Soybeans will again begin to find new fields of usage. For that reason the theme of the 1946 meeting is "Industrial Utilization of Soybeans."

Exhibits sponsored by commercial companies serving the soybean industry will be shown again this year for the first time since 1941.

There will be opportunity for enjoyment, along with the serious business. The trip to the Ralston Purina Experimental Farms will be a highlight to be remembered for years to come.

Program for the three days is carried on these pages. If you have not already made hotel reservations you will want to wire direct to the hotel immediately. Whether you come by private auto, train, plane, or bus—come. You'll find that mingling with soybean men from throughout the world will pay dividends.

We'll want to see you at the Hotel Jefferson—St. Louis—on August 29, 30 and 31. Howard L. Roach, President, American Soybean Association.

G. E. HILBERT

The annual reports on soybean research at the Northern Regional Research Laboratory, at Peoria, always occupy prominent spots on ASA programs. Dr. G. E. Hilbert, the director, succeeded Dr. H. T. Herrick last winter.

A. G. NORMAN

The relation of soybeans to soil fertility is still a live subject. Dr. A. G. Norman, formerly biochemist to the Rothamsted Experiment Station in England, and now professor of soils at Iowa State College, is well qualified to discuss it.

Donald S. Payne is also well known to ASA members. He went to Europe as a food expert for UNRRA in 1945.

DONALD S. PAYNE

N. BETZOLD

The future of soy oil is often considered the key to the whole soybean industry. N. Betzold, former chairman of the executive committee of the National Association of Margarine Manufacturers, will discuss its future in margarine and related products.

C. K. SHUMAN

Soybean processors recognize their vital interest in maximum soybean production and are taking steps to assist growers in keeping yields up. C. K. Shuman is chairman of the crop production committee of the National Soybean Processors Association, will discuss their program.

The southern variety program of the U. S. Regional Soybean Laboratory embraces 12 states and is centered at the Delta Experiment Station at Stoneville, Miss. Paul R. Henson, agronomist for the Stoneville station, will give another report on the program.

PAUL R. HENSON

J. W. HAYWARD

Dr. J. W. Hayward, director of biological research and development of the Archer-Daniel-Midland Co., is a well known authority on animal nutrition. He will discuss new developments in feeding soybean oil meal.

H. W. MILLER

Dr. H. W. Miller, president of the International Nutrition Laboratory, is another oldtimer on ASA convention programs. He became interested in nutritional problems while a medical missionary in the Orient, takes a world view of food problems.

J. W. Calland's large-scale survey of production practices of Corn-belt soybean growers which were published in the *Digest* last winter, attracted wide interest. He will give a further report on these surveys at the convention. Mr. Calland is director of agronomic research for Central Soya Co.

J. W. CALLAND

FRANCE

(*Continued from page 6*)

book, since it looked on him as a "resistant.")

The National Soya Center (C. N. S.) was founded by Jo Philippart, a big oil miller. The large mills of Chartres and soybean cooperatives at various places encouraged farmers to grow the crop. Many organizations distributed seeds.

There was a surprising increase in garden plantings, or "little cultures" as the French call them. Garden and horticultural societies distributed over 125,000 packets of soybean seed in 1943, while Matagrin personally gave away more than 200 kilograms of selected seed in small lots.

A monthly magazine, *Revue Internationale du Soja*, began publication in 1941. It is still being issued.

Thus the soybean became almost fashionable under German occupation. But growers were disappointed as in most cases returns were small.

French farms are so small as to make large scale production impracticable. In addition it appears that soybeans have somewhat the same obstacles to overcome in France that they have had in the U. S. French farmers grow corn, potatoes, sugar beets, hay and even vineyards on their better, level lands, try to produce soys on the poorer spots. They are attached to old established crops. Industrialists hesitate to try new ventures such as soybean processing. The people do not care much for soya foods, which they consider insipid. Other interests such as the peanut industry, dairymen and butchers fear competition, are hostile to soybeans.

Such was the situation in this country not many years ago.

But one-fourth of the French people became acquainted with the soybean during the war — a great advance.

Early and semi-early varieties grow to maturity in all of France, late varieties, in limited areas. Soybeans are usually planted in narrow or medium width rows. They are almost never planted solid, except for hay.

Mr. Matagrin estimates yields as high as 28 to 34 bushels an acre, all on exceedingly small plots by American standards. In 1945 the total crop amounted to perhaps 5,700 tons.

He asserts the French soybean will always cost too much to produce for technical uses, and will be grown preferably for fine food products. France is adapted to intensive rather than extensive production.

SUNFLOWERS

(*Continued from page 12*)

damage to a field, once infected. Sunflower rust (*Puccinia helianthus, Schw.*), Mildew (*Erysiphe achoracearum D. C.*), and Leaf Spots (*Septoria helianthi. Ell & Kell.*) have also been observed. Thus the disease hazard must be anticipated. Rotation of crops is advised to keep diseases to a minimum. There is some evidence of differences in the susceptibility of the varieties now available but more information is needed. Insect and disease control measures will have to keep pace with the crop if it is to be successful.

BREEDING

The goal of the plant breeder is to develop short-growing types with high-yielding ability, low-hulling percent, high oil content, resistance to lodging and shattering, and resistance to insects and diseases.

There is considerable variation in most varieties now available and it may be possible by selection and isolation to find a type which approaches this goal. Another approach is by developing pure lines through inbreeding. Continued inbreeding and selection will produce lines or strains breeding true for their selected characters. The desired characters may then be combined by crossing. The Canadian plant breeders use a natural crossing plot to make up single-cross hybrids. An example of one of these hybrids is S-37-388 x Sunrise, yields of which appear in the tables. Hybrid vigor such as exhibited in corn is found in many of these crosses. If desirable, the single-cross may be used for seed production or by selection within the segregates isolate out desirable lines.

"This is the way one of our more recently acquired customers looked just *before* he contacted us. We admitted that *we do supply good stout bags for Soybeans, Meal, Feed and Flour;* and that our plants at New Orleans, Savannah, and Houston give good service. He was relieved, and we helped with the *best* solution to his problem, and thought we'd better remind you too —

★

"Think of Mente
When you think of Bags!"

★

MENTE & CO., Inc.

I. T. Rhea, Pres.

NEW ORLEANS HOUSTON
SAVANNAH

Two Soy Flour Bee Foods

Here are bees feeding on two pollen substitutes. Beekeepers provide them when pollen, a high-protein feed which bees gather from flowers and store in the hives, is lacking. Both substitutes contain soy flour. At left, a mixture of soy flour, pollen and sirup. At right, soy flour, brewer's yeast and sirup. The bees like both concoctions.

—American Bee Journal

WELL--- FAN MY BROW !

HERE ARE SOME HOT ITEMS FOR YOU:

We are talking about Weed Killers — those new potent farmers' helpers which are doing such a great job this season on weed pests. Popular, and deservedly so, these products belong on your shelves, from which they will find their way very soon to the farms in your territory. Profitable to handle too — discounts up to 40%.

With these Weed Killers your customers can rid their farms of most of the troublesome perennials and kill off next year's annual crop of weeds at the same time by preventing seed formation.

WEEDICIDE, WEEDONE, WEED-NO-MORE . . . there's the trio . . . all of the 2,4-D variety . . . take your pick! The first is from the laboratories of the Thompson Horticultural Chemicals Corporation, the second a product of American Chemical Paint Co., and the last a new product made by Sherwin Williams and packaged especially for lawns.

NOD-O-GEN SEASON AGAIN

Fix-O has been working hard this year guarding the high quality of Dickinson's NOD-O-GEN, the pre-tested legume inoculator. He's ready, too, with new strains for the new legumes coming into favor in certain parts of our country. Time to think about your fall and next season's requirements of this popular, profitable product. Don't delay, get your booking in at once.

Farm Laboratory Division

THE ALBERT DICKINSON CO. P. O. BOX 788 CHICAGO 90, ILLINOIS
ESTABLISHED 1854

SOUTHERN OFFICE AND WAREHOUSE, 3013 N. STATE STREET, JACKSON, MISSISSIPPI

NOD-O-GEN The Pre-Tested Inoculator
The Crop and Profit "Pepper Upper"

FEED CRISIS PAST SAY MANUFACTURERS

The animal feed shortage, until just recently the most serious in our country's history, is now about over, the American Feed Manufacturers Association, Chicago, Ill., declares.

In a statement which contained good news for farmers, as well as city consumers of meat, milk and eggs, the feed association also revealed:

That livestock and poultry feed pipelines, long practically empty, are flowing almost normally again;

That feed supplies will be so plentiful during the 1946-47 crop year that a desired increase in production of meat, dairy, and poultry products will result, provided OPA price controls are not reestablished on feedstuffs and farm products;

That there will be enough feed available to feed all our livestock and poultry without using any more wheat for feeding than was used before the war;

And that feed supplies will be so large that at no time during the coming year will the cost of feeds in a free market become unreasonably high.

The rather sudden improvement in the feed picture, according to the feed manufacturers, is the result of the expiration of OPA price ceilings on farm products, the progressive development of prospects for bumper feed grain production this season, and some reduction in livestock numbers.

The association based its predictions primarily on the U. S. Department of Agriculture's July 15th crop report which estimates a record corn crop of 3,488,000,000 bushels. The feed men said that indications are that it will not only be the largest corn crop in history, but will be high quality as well.

It also explained that in addition to these large domestic supplies of feed grains, current Canadian crop reports are such as to indicate that Canada may be seeking an outlet for some of her surplus grains in our market.

The feed manufacturers stated that price controls on feeds, feed ingredients, and farm products were unnecessary in the face of bounteous crops, asking that the feed industry be given an opportunity to aid the livestock and poultry producer in producing the maximum amount of meat, milk and eggs without any handicaps so that the maximum production of these products and the greatest utilization of our available feed supply can be accomplished.

The optimistic forecast of the American Feed Manufacturers Association does not take into account, however, the acute shortage of protein concentrates which some careful observers believe will continue the worst in our history during the coming year.

SOYBEAN PRODUCTION FOR 1944 AND 1945

Estimates by counties for the 18 principal states of soybean acreage, yield and production for 1944 and 1945, have been published by the USDA crop reporting board. Figures are official for 1944 and preliminary for 1945.

The county estimates are a breakdown of the official state estimates and were prepared by the agricultural statisticians in the various states.

The big five states in soybean production retain the same ranking which they have held since Pearl Harbor. Production by bushels in 1944 and 1945 in these states was as follows:

Illinois 72,870,000 and 74,100,000; Iowa 38,720,000 and 34,848,000; Indiana 23,744,000 and 27,924,000; Ohio 21,796,000 and 20,072,000; and Missouri 10,605,000 and 9,490,000.

Minnesota now stands in sixth place among soybean producing states, with 4,340,000 bushels in 1944 and 6,825,000 in 1945.

States with from 1 to 4 million bushel crops in one of the two years are: Arkansas, Kansas, North Carolina, Mississippi, Michigan, Virginia and Tennessee.

Other states included in the survey are Delaware, Kentucky, Maryland, Nebraska and Wisconsin.

from RAW COTTON to FINISHED BAGS..

FULTON BAGS made in our plants from the raw cotton to the finished bag assures you a safe and economical container for shipping soybean meal.

Quality — Appearance — Strength — these factors are all "in the bag" when you use FULTON BAGS for your meal, pellets and feeds. FULTON artcraft printing of your brand is a valuable sales aid. Remember, too, that your soybean meal will not heat when stored in cotton bags. For the best in cotton bags, always specify FULTON.

FULTON BAG & COTTON MILLS

Manufacturers Since 1870

Atlanta St. Louis Dallas Minneapolis Denver
New Orleans Kansas City, Kan. New York

MARGARINE MANUFACTURERS PLEDGE:

Domestic Oils Only

Only domestically produced fats and oils will be used in the margarines made by members of the National Association of Margarine Manufacturers, according to an announcement issued by Paul T. Truitt, president of the Association.

The continuance of this policy of making margarine entirely from ingredients produced on American farms is of vital importance to everyone participating in or concerned with the growing or processing of the ingredients used in manufacturing margarine.

Soybean oil, one of the most important ingredients in modern margarines is among the Cornbelt's most valuable products. When the supply of fats and oils is again plentiful, it is desirable that the planters and processors of soybeans do not suffer from a restricted demand.

INSURE ACTIVE MARKETS

This policy on the part of the National Association of Margarine Manufacturers should help to assure an active, nationwide market for the soybeans and that American consumers will enjoy a pure, nutritious and palatable food made exclusively from products of the American farm.

Mr. Truitt's announcement in behalf of the National Association of Margarine Manufacturers follows:

ANNOUNCEMENT

"The experience of World War II has shown to the people of the United States that even in this nation, acute shortages of basic foods and materials can develop almost overnight. Every American knows about the shortages of such every-day essentials as sugar, tin, rubber and also fats and oils.

"One lesson learned by this experience is clear. America must, in time of peace, insure plentiful supply. When an emergency comes, it is too late. Margarine is a pure, nutritious and palatable food which, in recent years, has been made exclusively from domestic fats and oils. During this period, margarine has become increasingly popular with the American people. From the American farms come the fats and oils used in margarine—cottonseed, soybean, peanut and corn oils, and meat fats. If it had not been for these American farmers and their tremendous productive efforts, the shortage of margarine today would be substantially greater.

"The members of the National Association of Margarine Manufacturers strongly believe it would be in the best interest of the American farmer and consumer that a dependable and ready source of supply of margarine should be assured at all times. They announce, therefore, that *they intend to continue to utilize only domestically produced fats and oils in the manufacture of their product.*"

—s b d—

JOGUN IS BEST

In New York, experience indicates that Jogun is about the best vegetable variety for all around quality, reports Frank A. Lee in *Farm Research*, Geneva, N. Y.

Bansei and Giant Green are a close second in that state.

Says Lee: "Vegetable soybeans mature very late in the season. They are highly prized for their nutty flavor.

"Soybeans are very hard to shell if this operation is carried out with the raw pods. However, if they are blanched in the pods, by immersion in boiling water for 4 minutes after the water returns to boiling (which should be within 1 minute), the beans are easily removed from the pods by squeezing. The pods should be partially cooled before this is attempted.

"The beans need no further blanching. They are packaged, frozen, and stored at 0 degrees Fahrenheit, or lower."

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there is a PRICE RISK

ARE you carrying a heavy commodity inventory? If so, you may want to consider the advisability of hedging *now*—for every commodity inventory today carries with it the risk of capital loss should prices suddenly decline. Sharp price drops followed World War I and the history of commodity prices indicates that substantial fluctuations in the market may be expected.

In this connection, the services of our Commodity Department can be of assistance to *you.* Our staff of specialists in every commodity is constantly alert to provide fast, valuable, *interpretative* information related to your specific needs. In addition, the facilities of our 91 offices in 90 cities—60 of which are located in areas where commodities are either largely grown or processed—include an interconnecting private wire system of 40,000 miles which provides efficient aid in the transmission of such data.

If you should care to consult with us concerning your commodity problem, just write or call at any one of our 91 offices.

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National Per Acre Yield 19.8 Bushels

U. S. soybean production will total 186,123,000 bushels in 1946, on the basis of August 1 condition, the U. S. Department of Agriculture's crop reporting board estimates.

This is the lowest national production since 1941, and compares with 191,722,000 bushels last year.

The per acre yield, however, is 19.8 bushels, the third highest on record and well above the 17.6 average bushel yield of last year. Only Michigan, Kansas and Oklahoma expect lower than average yields. Illinois expects 23 bushels per acre, Iowa 20.5 bushels, Ohio and Indiana 20 bushels.

Indicated production in bushels in the 13 major producing states: Ohio 18,820,000; Indiana 25,800,000; Illinois 72,542,000; Iowa 32,021,000; Michigan 1,537,000; Minnesota 9,588,000; Missouri 10,336,000; Kansas 1,881,000; Virginia 1,290,000; North Carolina 2,300,000; Kentucky 884,000; Tennessee 1,360,000; Arkansas 3,553,000.

Digest reporters have on the whole very favorable reports on the condition of the crop in their respective localities. Their August 1 reports follow:

ARKANSAS

Jacob Hartz, Stuttgart, for east central: Quite a large acreage planted first 10 days of July. Will mature by normal frost date. General maturity about normal. Moisture conditions fair to good. 10-15% would be caught by early frost.

Tildon Easley, extension agronomist, Little Rock: Maturity normal. Yield outlook good. Moisture condition fair except in local areas. Very little if any would be caught by early frost. Have had very few reports of disease or pests. 40-50% will be used for hay or silage, the acreage depending to some extent on prospective bean yields, weather conditions, and need for forage by individual farmers.

FLORIDA

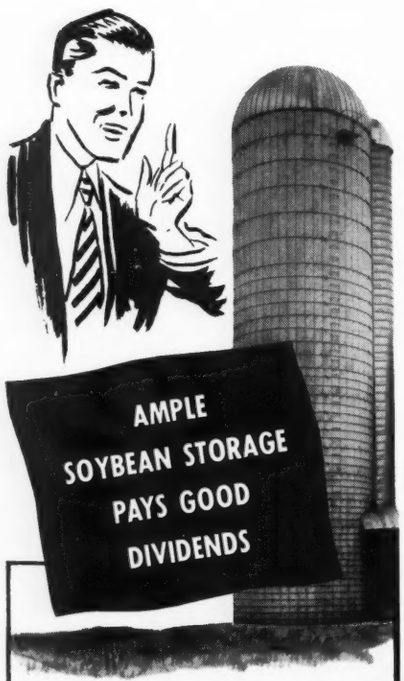
E. H. Finlayson, County Agent, Pensacola, for Escambia County: Maturity normal. Yield outlook and moisture conditions good. Very few beans would be caught by early frost. No diseases or pests as yet.

ILLINOIS

A. J. Surratt, Agricultural Statistician, Springfield: Illinois soybean prospect August 1 one of best on record, particularly in the main soybean area across central third of state. Bulk of crop now blooming. Rain needed soon to support this fine prospect especially in dry area in northeast corner of state and some dry areas in southeastern part. About 2% of state acreage planted first week in July, mainly in southern third of state. About 15% of state crop would be damaged by early frost. Yield outlook well above 10 year average of 20.1 bu. No diseases or pests. 9% of crop for hay or silage.

Russell S. Davis, Clayton, for west central: No July planted acreage. Beans began blooming middle of July, normal for this latitude. Yield outlook very promising. Stands good, good height, uniform. Not many weedy fields. Moisture conditions ideal to date except on creek and river bottoms where flash floods overflowed crop. It would take September freeze to do much damage to crop. While planting was about 10 days late, germination was prompt, and ideal growing conditions have pushed crop along to well advanced development. With hot nights during next 2 weeks are liable to have a lot of lodged beans.

J. E. Johnson, Champaign, for Champaign and adjoining counties: Maturity ahead of normal. Yield outlook best on record. Moisture sufficient for this crop. Some need of rain but not suffering. Have heavy dews and some light showers, very beneficial at this full blooming period. Farmers are rowing more each year and giving better at-



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1946 CATALOG READY

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tention to technique of securing consistent yields.

Frank S. Garwood, & Sons, Stonington, for south central: Maturity rather ahead of normal. Yield outlook best for several years at this date. So far plenty of rain. Some grasshopper and insect damage but too early to check on stem rot which was so bad last year.

Walter W. McLaughlin, McLaughlin Agricultural Service, Decator, for vicinity: Maturity 100% of normal. Yield outlook excellent. Moisture excellent. Most of our beans should mature ahead of frost. Even though we had a large reduction in acreage, the prospect at present is excellent for good crop on acres planted.

INDIANA

Peter J. Lux, acting chairman PMA, Indianapolis: Some July planted acreage in southern sections due to late floods. With average season will mature. Maturity slightly later than normal. General conditions ideal in central areas. Prospects improving. Good rains in heavier producing sections. Most beans now in full bloom and should be matured before frost. Very little disease or pests reported. Good hay crop in most sections. Few beans will be required for this purpose.

K. E. Beeson, agronomist, West Lafayette: Maturity normal. Yield outlook reasonably good. Rain generally needed. With exception of several northern counties, moisture conditions reasonably good. No diseases or pests yet.

J. B. Edmondson, Clayton, for south central: Maturity possibly week behind 10-year average, about same as for past 3 or 4 years. Beans blooming now. Prospects for up to 10% above average in yield. Moisture conditions ideal to date in this area. Rains will be needed in next 10 days. Not over 5% will be caught by frost if not too early. No serious pests showing up yet. Clover hay shortage will result in more bean hay than past few years. Practically all Lincolns with a few Richlands on black soils. Dunfield about out of picture. Unusual number of farmers express fear of too thick planting, due chiefly to very rapid midsummer growth. No grounds for such concern. Stands unusually good, due to comparatively late planting. Good seed bed and weed control.

IOWA

Martin G. Weiss, Farm Crops Department, Iowa State College, Ames for central: Maturity slightly ahead of normal. Yield outlook better than normal. Moisture conditions excellent. 15% would be caught by early frost. No diseases or pests of great magnitude.

Howard L. Roach, Plainfield, for northeast: Maturity 110% of normal. At present looks like a record yield for all time. Moisture good. 10% would be caught by early frost.

O. N. LaFollette, Feed Institute of Iowa, Des Moines: Maturity about 10 days in advance of normal. Yield outlook very good. Looks like 10% above last year. Moisture conditions satisfactory. July plantings in flooded areas would be caught by early frost.

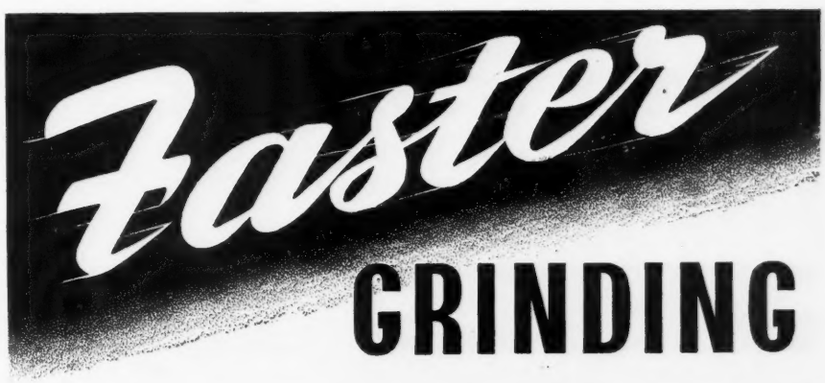
John Sand, Marcus, for northwest: All soybeans look very good. Outlook is for a bumper crop. However, apparently some disease has caused defoliation of approximately the lower 6 inches of the bean plants. Rest of the plant seems doing very well. Maturity somewhat ahead of normal. Very few would be caught by early frost.

KANSAS

E. A. Cleavinger, extension division, Kansas State College, Manhattan, for eastern: Maturity normal. Some July planted acreage, but not as much as preceding years. Yield outlook depends on rain. Rains in general are spotted and light. 5% would be caught by early frost. Grasshoppers doing some damage. Stands fairly free of disease. Crop in Kansas is entirely dependent on rain from here on out. Fields free of weeds and growth is excellent but moisture conditions not good.

MINNESOTA

John W. Evans, Montevideo, for southwest central: Maturity normal. Moisture



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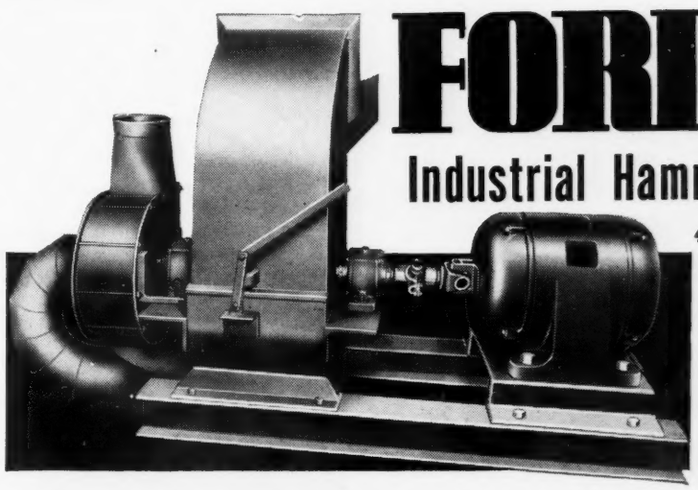

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conditions and yield outlook good. 25% could be caught by early frost.

W. G. Green, Lakefield, for southwest: Maturity about 10 days early. Outlook for 20 bu. per acre yield. Moisture conditions good. All fields looking very good, starting to blossom so should be out of the way by September 15. Beans never looked better.

MISSOURI

Lyman Reed, Missouri Soybean Co., Caruthersville, for southeast Missouri, northeast Arkansas, west Tennessee: Maturity normal, planting dates considered. Yield outlook best ever to date. Moisture conditions generally adequate. Winds have caused lodging in a few spots. Possible recurrence appears to be only hazard ahead of us.

Harry A. Plattner, Malta Bend: Maturity 90% normal. Yield outlook of early plantings on good land about 25 bu. Rain needed very much. Only July plantings would be caught by early frost. Very slight disease or insect damage.

J. Ross Fleetwood, extension specialist, University of Missouri, Columbia: Yield outlook very good on whole. Some local areas somewhat weedy. Moisture conditions okay except for local areas of small extent. Temperatures are high, however, and moisture will be needed soon. Grasshoppers in a few small areas.

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NEBRASKA

J. C. Swinbank, Nebraska Grain Improvement Association, Lincoln: Maturity several days earlier than normal. Development uniform because favorable weather last spring made it possible to plant at proper season. Yield outlook excellent. Should be 2-3 bu. per acre better than in 1945. Moisture conditions good. Nothing suffering. Beans look the best I have ever seen them though moisture will be needed soon to make a good crop.

John Slatensek, agronomist, University of Nebraska, for east central: Plant development several days earlier than normal. Yield outlook favorable. Adequate moisture thus far but additional rain will soon be needed. Disease and insect damage negligible.

OHIO

D. G. Wing, Mechanicsburg, for central: Beans planted here up to July 6. Will take late season to mature. Early beans above average in yield outlook but late beans will take more rain and frost late in October. Recent rains have helped very much. 25-50% would be caught by early frost.

D. F. Beard, agronomist, Ohio State University, Columbus: Small amount of July planting in fields previously planted. Will mature with favorable fall season. Maturity most irregular I've seen in years. Some early planted fields now podding. Others just up nicely. Yield outlook for average crop. Moisture conditions plenty at all times. Too much sometimes. 15-20% would be caught by early frost. Increasing amounts of foliage diseases, most unidentified as to specific disease. Also considerable potash starvation on mucks, low sands and to lesser degree on some upland fields.

WISCONSIN

George Briggs, Agricultural College, Madison: Maturity 100%. Yield outlook same as 5-year average. Moisture conditions not too good in southwest. None would be caught by early frost.

—sbd—

DISMISS AMERICAN LECITHIN PETITION

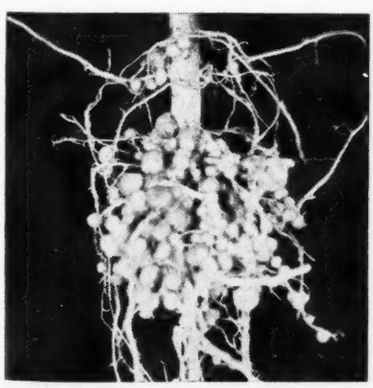
The U. S. Circuit Court of Appeals, New York City, has dismissed for lack of jurisdiction a petition filed by American Lecithin Co. asking review of a Federal Security Administration order requiring manufacturers of certain chocolate products to use the word "emulsifiers" in their labeling when lecithin is used.

Federal Security Administrator said the order does not prohibit chocolate manufacturers from using the word "lecithin" as contended by American, but merely requires addition of an explanation that it is an emulsifier.

"We accept this reasonable construction by the Administrator of his own order," said the court. "So construed the order does not adversely affect American Lecithin Co. since its customers are privileged to use 'lecithin' on their labels, or not, as they elect."

SOYBEANS NEED INOCULATION!

Soybeans need lots of nitrogen. Inoculating the seed with NITRAGIN helps supply this. The cost is only about 10¢ an acre. NITRAGIN inoculation supplies vigorous, effective legume bacteria. It boosts yields—often up to 50%. Helps crops to a faster start, gives more vigor to fight weeds and drought, increases oil content of soybeans. It pays to be sure when you put in soybeans—inoculate every planting with NITRAGIN.



Inoculation Saves Fertility

Nitragin scientists conduct extensive laboratory and field tests to assure the quality of NITRAGIN legume bacteria. Experience shows you can't depend on inoculation from previous crops because legume bacteria may die off or lose their effectiveness. NITRAGIN, first for nearly fifty years, is the most widely used inoculant in the world. Help grow better crops and save—often build—soil fertility . . . inoculate every planting of soybeans with fresh NITRAGIN.

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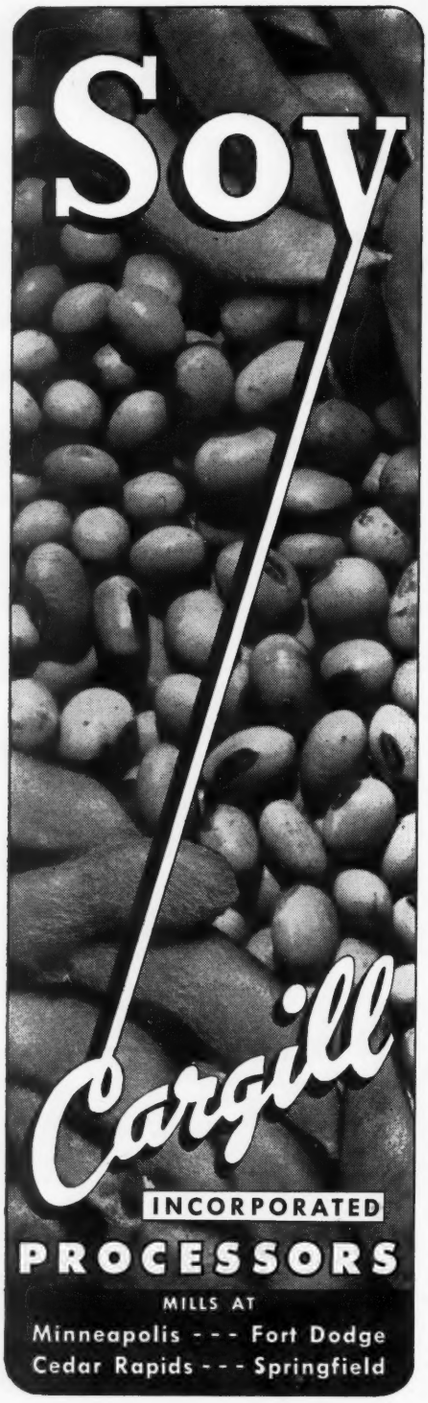

USDA SAYS OILIER CORN IN PROSPECT

Breeding a by-product value into corn—an increase of oil in the germ—has advanced as an economic possibility as a result of research by U. S. Department of Agriculture chemists. They have found that the oil content of hybrid corns may differ widely—as much as 36 percent in the case of two popular hybrids. As a result, corn growers one of these days may be growing and selling new hybrid corns bred to supply more corn oil when processed—and worth more on the market because of this increase in oil value.

This applies particularly to growers who sell corn for use in industries producing products such as starch, alcohol, breakfast foods, hominy and oil. The oil reaches the public and industry in a variety of commodities ranging from shortening, margarine, and salad dressings to soap, paint, varnishes and printing ink.

The importance of corn oil in the United States—production averaged more than 200 million pounds annually from 1940 to 1945—started research at the Department's Northern Regional Research Laboratory, Peoria, Ill., to discover the range of oil content in hybrid corns, and whether the variation is wide enough to be significant to both growers and processors. F. R. Earle, J. J. Curtis, and J. E. Hubbard found that two commonly grown hybrid varieties showed a difference of at least 36 percent in their yields of oil.

In most corn the oil is mainly in the germ. The question rose: "Is the oil content of hybrids also mainly in the germ, or have the breeding methods that developed the hybrids caused a general change in composition?" By dissecting many kernels and analyzing the parts it was found that hybrids did not differ from open-pollinated varieties in their physical proportions. Oil was still confined mainly to the germ whether oil content was high or low.

The practical importance of this research is that processors have assurance that any increase in oil content of a hybrid variety will be in the germ—the only part they process for oil—and that other parts of the kernel are not likely to differ in chemical composition enough to influence their present industrial uses.

From the standpoint of the corn grower, it is necessary that high yield or other desirable qualities accompany any development of high-oil varieties. Whether growers can gain a premium for high-oil corn will depend, the Agricultural Research Administration points out, upon whether such corn has added value to the processor. This research indicates one more way of enhancing the value and of extending the industrial uses of farm crops.

—s b d—

WHY A DIFFERENCE IN THE PROTEINS

Differences in the biological value of proteins can be accounted for by the rate of release of individual amino acids during enzymic digestion, according to Dr. Daniel Melnick and associates of the Food Research Laboratories, Long Island, N. Y.

In *Science* 103; 326, 1946, they present this view mainly in relation to their studies on raw and heat-treated soybean oil meal. They found that the rate of release of various amino acids for these two types of proteins differed, although the co-efficients of digestibility were approximately the same.

The work of these authors indicated that methionine is released earlier from heat-processed soy meal than from the raw soybean oil meal during the process of digestion.

Although the same amount of methionine was released and absorbed from both products, the slower rate of absorption in the raw meal occurring in the intestinal tract apparently led to inefficient utilization of this amino acid in the synthesis of body protein.

—s b d—

To obtain the highest yield of hay, the farmer should let his soybean crop stand until the beans in the pods are plump and nearly full size, but not until the leaves begin to fall, advises J. B. Park of the Agronomy Department of the Ohio Agricultural Experiment Station. This stage of growth also gives the highest yield of protein per acre, says Dr. Park.

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Publications

Foods

LOAF VOLUME POTENTIALITIES, BUFFERING CAPACITY, AND OTHER BAKING PROPERTIES OF SOY FLOUR IN BLENDS WITH SPRING WHEAT FLOUR. By K. F. Finney. *Cereal Chemistry*, January 1946.

Excellent bread may be made from wheat-soy flour blends including up to 8 percent soy flour by the use of from 3 to 5 times the quantities of potassium bromate needed for wheat flour alone.

Baking studies were carried out in the Federal Soft Wheat Laboratory at Wooster, Ohio, using a commercially milled and bleached hard red spring wheat flour containing 15 percent protein, with various increments up to 8 percent of each of three different soy flours. Amounts of potassium bromate up to 8 mg. per 100 g. of flour were used. Absorption and mixing time were varied and bakings were made with and without 4 percent milk solids.

Quality of the bread, as measured by loaf volume and crumb grain, was even better than for wheat flour alone provided the quantity of potassium bromate used in the baking formula was increased according to the amount of soy flour used.

Absorption and mixing time increased with the amount of soy flour used.

A hexane-extracted flour buffered the effect of excess potassium bromate fully as effectively as nonfat milk solids. Crumb color of the bread became progressively more cream-gray with increased amounts of soy flour.

Color change produced by adding as much as 4 percent soy flour probably would not be noticed by most consumers.

SOY FLOUR OR MILK, ANIMAL MILK AND ARTERIOSCLEROSIS. by Stephan Jamyn in *Revue Internationale du Soja*, March 1946.

Recently research workers have come to the conclusion that soya in the human diet tends to reduce arteriosclerotic lesions, while casein of milk intensifies them. In an experiment on rabbits hardening of the arteries was artificially produced by cholesterol.

Since soya, due to the unsaponifiability of its oil in phytosterols, has been recognized as a protector against the sclerotic factor while animal casein increases its power, here is a new and powerful argument for the admission of the soybean into the western diet and culture, in the opinion of the author.

Since experiments seem to prove that it is only animal casein which would be apt to cause arteriosclerosis, this is a new objection to the misuse of milk in the diet of aging adults. It is known that an excess of lactic acid menaces the heart.

The author suggests that soya offers to older people the opportunity of nourishing themselves well and of even safely drinking milk, since it is exempt from harmful residues.

THE EFFECT OF SOY FLOUR ON THE NUTRITIVE VALUE OF THE PROTEIN OF WHITE BREAD. F. E. Volz, R. M. Forbes, W. L. Nelson and J. K. Loosli, Cornell University. *Journal of Nutrition*, 1945.

Weanling rats made a 20 percent greater gain per gram of protein consumed on a diet including white bread containing 5 percent full-fat soy flour than when the bread contained no soy flour. In both cases the bread contained 3 percent whole milk solids.

The biological value of the protein of white bread without soy flour was determined at 43.3 compared to 47.7 for the bread containing 5 percent soy flour.

Fertility Level

THE EFFECT OF STRAW AND NITROGEN ON THE YIELD AND QUANTITY OF NITROGEN FIXED BY SOYBEANS. By L. A. Pinck, F. E. Allison and V. L. Gaddy, Bureau of Plant Industry, Beltsville, Md. *Journal of American Society of Agronomy*, May 1946.

By these greenhouse studies the authors wanted to answer two questions:

1—Does incorporating straw in the soil lower the yield of the soybean crop following?

2—Will addition of commercial nitrogen to the straw affect the soybean's yield and its fixation of atmospheric nitrogen?

The results:

Chopped fresh wheat straw mixed in greenhouse pots did decrease somewhat the yield of inoculated soybeans, though not as much as it did the yield of wheat.

The addition of urea speeded decomposition of the straw and it increased soybean yield. It also slowed down nitrogen fixation by bacteria on the soybean roots. (In some

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cases rapid decomposition of straw is undesirable, as where it increases loss of soil nitrogen or hastens erosion.)

The experiments indicate that the legume crop is a good place to utilize crop residues.

They also show that application of nitrogen to inoculated soybeans is not profitable when residues are not present. The added nitrogen merely reduces nitrogen fixation. It is generally recognized that soybeans fix nitrogen more rapidly in soils low in nitrogen.

Varieties

GENETIC STUDIES ON THE WILD AND CULTIVATED SOYBEANS. By C. L. Ting, formerly associate professor in plant breeding of the National Yunnan University, Kunming, China. *Journal of the American Society of Agronomy*, May, 1946.

The present study was begun early in 1935 in the National Central University, Nanking, China. After the entire materials were destroyed during the Sino-Japanese war, it was repeated in 1939 in the National Yunnan University, Kunming, China. The latter results are reported.

A wild and a cultivated soybean were used in the investigation. The wild soybean, *Glycine ussuriensis* Regel and Maack, is widely distributed throughout the Yangtze Valley. It is prostrate in habit, has long fine twining stems and small oblong hard seed of a sooty black color. The cultivated species, *Glycine max* (L.) Merrill, possesses characters that are in contrast.

The mode of inheritance of such characters as fertility, hardness and color of seed coat, height of plant, size and shape of seeds, and linkages of gray pubescence and defective and soft seedcoats was studied.

A sharp-tipped pubescence is here reported as a new character.

Margarine

THE BUTTER-MARGARINE CONTROVERSY. H. J. Deuel Jr. (Univ. So. Calif.). *Science 103*, 183-7 (1946). The conclusions reached by several workers and organized committees are reaffirmed. Some of these follow.

Human milk fat, in regard to its component acids has more resemblance to a typical margarine fat-blend than to butterfat (Hilditch and Meara).

The Committee on Public Health Relations of the New York Academy of Medicine recommended that the manufacture, distribution, and utilization of margarine be encouraged, it should be fortified with vitamin A at the uniform level of 9,000 U.S.P. units per lb., and that wide publicity be given the fact that margarine, fortified by vitamin A, is nutritionally equal to butter. The Food and Nutrition Board of the National Research Council recorded that the present available scientific evidence indicates that when fortified margarine is used in place of butter as a source of fat in a mixed diet, no nutritional differences can be observed.

Finally it is stated that we can scarcely view with concern the increased use of margarine in the diet if that means that larger amounts of whole milk become available at a reasonable cost for human consumption.

Diseases

INDUCED BALDHEAD IN SOYBEAN. By H. R. Porter, Iowa Experiment Station. *Phytopathology*, 1946.

Author indicates that a type of "baldhead" can be induced in soybean seedlings by planting seeds in a *Pythium*-infested soil at 50 degrees F. for the first part of the germination period.

Seeds of Banzei, Kanro and Lincoln varieties were planted in a mixture of sand and soil spontaneously infested with *P. graminicola* and *P. debaryanum*.

Seedlings from untreated seed showed from 9 to 40 percent of "baldheads" in which the plumule was killed or partly decayed. Seedlings grown from seed treated with Arasan or Spergon were relatively free from this condition. Those from untreated seed planted in sterilized sand at 50 degrees F. were also free.

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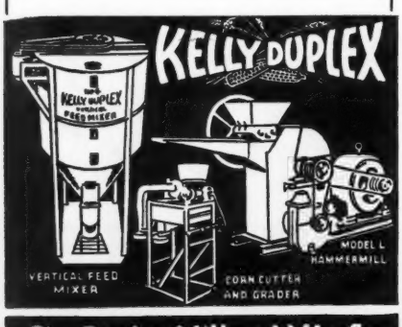

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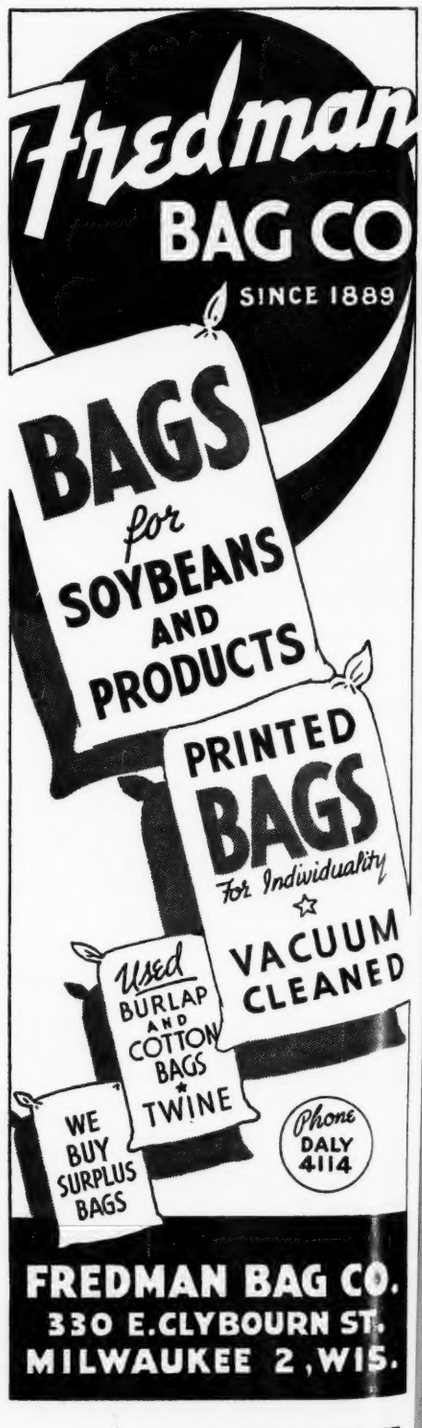


USDA MEN WHO HAVE CONTRIBUTED TO SOYBEAN DEVELOPMENT

★ ★ ★

REID THOMPSON MILNER

Dr. Milner drains off the oil extracted from soybeans in an experimental solvent extractor at the Peoria Laboratory.

Dr. Reid Thompson Milner is a native of Illinois. He graduated in chemical engineering at the University of Illinois, and continued his studies there in physical chemistry for the M.S. degree. Subsequently, he attended the University of California where he received his Ph.D. in chemistry. His research career began at the Bureau of Mines in Pittsburgh. Later he transferred to the Fixed Nitrogen Laboratory of the U. S. Department of Agriculture's Bureau of Chemistry and Soils at Washington, D. C.

Dr. Milner became interested in soybeans in 1936 when he joined the staff of the U. S. Regional Soybean Industrial Products Laboratory, Urbana, Ill., at the request of Dr. O. E. May who invited him to take charge of the analytical section of that Laboratory.

In addition to his duties in directing the analytical work of the Laboratory, he carried on many physical chemical researches on soybean oil and soybean protein. Outstanding among his published investigations were reports of studies of the physical chemical factors affecting the dispersion of soybean protein in water, the effect of alcohol on soybean protein dispersions, the determination of non-protein nitrogen in soybean oil meal, and a method for the determination of saturated fatty acids in oil.

When Dr. May was called to Washington to assist in the organization of the four Regional Research Laboratories, Dr. Milner was appointed to succeed him as director of the U. S. Regional Soybean Industrial Products Laboratory. He assumed this responsible position of leadership on August 1, 1939, and directed the Laboratory with distinction and with the hearty approval of his associates in the Laboratory and in industry.

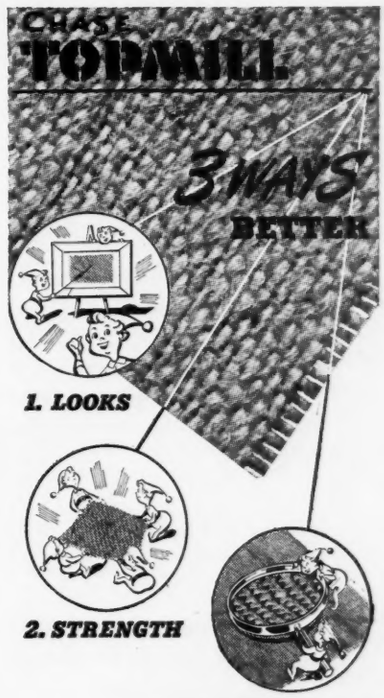
When the Northern Regional Research Laboratory was organized, Dr. Milner was selected to head the analytical and physical chemical division, a position which gave him an even broader field in the program for industrial utilization of agricultural commodities.

Dr. Milner's diversity of interests and his spirit of cooperation are well illustrated by his activity on the Soybean Nutritional Research Council and his committee work in the American Oil Chemists' Society. In the latter organization, he is chairman of the soybean analysis committee, and is serving on committees for bleaching methods, oil color, refining loss, fat analysis, and seed and meal analysis. Dr. Milner is at present the first vice president of the Oil Chemists' Society.

In connection with the wartime soybean marketing program, the Commodity Credit Corporation requested the aid of Dr. Milner in establishing proper methods of analyses, in training personnel in these methods, and in checking the accuracy of the analyses so performed.

His present program in the application of physical chemical methods to analytical chemistry includes X-ray analysis, spectroscopic investigations, and high-vacuum distillation methods. Penicillin and Norepol are specific examples of products whose development was materially aided by these physical methods.

Determination of chemical and physical properties and characteristics of commodities and their products and derivatives, and provision of specialized chemical and physical services and investigations and general service analyses for all laboratory research projects have comprised an important and effective approach to the greater industrial utilization of agricultural commodities.



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GRITS and FLAKES... FROM THE WORLD OF SOY

The Borden Co. has announced construction of a soybean solvent processing plant with 900,000 bushels grain storage at Kankakee, Ill. Storage facilities are to be ready at harvest time. The processing plant will begin operations in January.

* * * *

Research work of Archer-Daniels-Midland Co., Minneapolis soybean processors, was praised by Congressman Frank B. Keefe of Wisconsin in hearings before a House appropriations subcommittee. The amount of money the firm spends on research is "terrific," said Keefe.

* * * *

General Mills, Inc., has announced plans to build a products control laboratory adjoining its research laboratory at Minneapolis. Estimated cost is $193,000.

* * * *

Independent Retail Food Distributors of Frederick County, Md., have urged discontinuance of the federal retailers license fee on margarine.

* * * *

M. D. Farrar, research entomologist, Illinois Natural History Survey, Urbana, Ill., went to Durham, N. H., to become associate director of the Crop Protective Institute, July 1.

* * * *

A new bulletin, "Union Special Suspended Head Utility Units," describing a low cost bag closing unit especially designed for small plants, has been issued by Union Special Machine Co., and may be obtained from the firm at 498 N. Franklin St., Chicago 10.

* * * *

Irving Sullivan has been appointed traffic manager of Toledo Soybean Products Co. He was formerly with GLF at Buffalo.

* * * *

Despite increases in the market price of soybean oil meal to as high as $105 a ton, A. E. Staley Manufacturing Company of Decatur, Ill., has maintained its price at $59 a ton in conformance with the industry contract with the Commodity Credit Corporation, the firm announces.

* * * *

William W. Starks, Jr., has been appointed assistant manager of the industrial sales division of A. E. Staley Manufacturing Co., Decatur, Ill., effective July 15. He will succeed Russell E. Baer, who is resigning to go into private business.

* * * *

Dates for the 20th annual fall meeting of the American Oil Chemists' Society are announced in the July issue of *Oil & Soap* as being October 30, 31, and November 1, with the Edgewater Beach hotel, Chicago, as the place. George A. Crapple of Wilson and Co., Chicago, is the general chairman.

ANDERSON ANNOUNCES ADDITION OF SOLVENT EXTRACTION EQUIPMENT

The V. D. Anderson Co., for over 50 years manufacturer of Expellers, announces the addition of solvent extraction equipment to its line of oil milling equipment. In making the announcement, the company points out that the production of both Expellers and solvent equipment places it in a position to be of greater service to the oil milling industry.

Anderson officials emphasize that their solvent extraction equipment in no way displaces Expeller equipment, but augments the Expeller line to enable the Company to furnish the type of equipment best suited for its customers' requirements, or permits the processor to obtain the type of equipment of his choosing.

OVERCOME OBJECTIONS

An executive of The V. D. Anderson Co. said, "For a number of years, our engineers have been studying existing solvent extraction systems with the purpose of developing equipment that would overcome the more common objections to the solvent process. These objections were the fire and explosion hazards, high insurance rates and high equipment costs. Our solvent extraction equipment demonstrates clearly how we have overcome these objections. Many years of experience in supplying equipment to the oil milling field, has given us an excellent background for this work."

The Anderson Solvent Extraction equipment has been engineered as a complete packaged unit requiring no housing. The actual extraction and solvent recovery equipment has been closely grouped together into a compact unit for erection out in the open, similar to gasoline refining equipment. This means that there is no opportunity for concentration of solvent vapor, hence, there is

practically no danger of explosion or fire. The preparation of raw materials and the milling of the finished products, is handled in a small building adjacent to the solvent equipment unit. The regrouping of the equipment reduces the need for conveying and elevating equipment, thereby saving materially on costs. Insurance rates on this safe outdoor unit are definitely lower.

ONE SMALL BUILDING

A distinctive feature of the Anderson Solvent Extraction Equipment is its limited building requirements. Since the packaged solvent unit is an outdoor installation, only a small two-story building is required for product preparation and finishing. This reduces investment in buildings to a minimum.

The Anderson solvent equipment is so compact and simple, that one operator can handle the entire preparation, extraction and finishing operation, thereby showing a decided savings in operating and overhead costs. Units operating are producing meal of ½ to 1 percent fat content.

Embodied in the Anderson Solvent Extraction Equipment is a new patented settling chamber for fines which differs from any piece of equipment used for similar purposes. It is built as a part of the extractor and settles the fines efficiently, eliminating the necessity for frequent cleaning of a loaded filter. Because of this radical departure a big saving in plant operating time and labor on filter cleaning is accomplished by this new patented settling feature.

The new equipment is now being provided for mills with a daily capacity of 50 tons or more, although the larger size units will be built later. In addition to the actual solvent unit, the V. D. Anderson Co. will provide such equipment as a separator, cleaner, cracking rolls, dehuller, tempering dryer, flaking rolls, etc.—everything needed for a complete solvent plant.

—s b d—

NEW MADRID MILL

The Southeast Missouri Oil Mill, Inc., a new half-million dollar plant is under construction at New Madrid, Mo., and will be ready for operation October 1. The new plant will be of French solvent extraction of about 100 ton capacity daily. Steel storage houses of 750,000 bushels have just been completed.

Tom F. Baker, prominent planter and ginner of Malden, Mo., is vice president and general manager. Dave Barton, large planter-ginner of Catron, Mo., is president. R. V. Beall, ginner and grain elevator owner of Bernie, Mo., is vice president. John E. Hunt, also of Bernie and operator of grain elevators and ginner is secretary-treasurer.

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The Janesville Mills, Inc., processing plant, Janesville, Wis., closed down in mid-July after a successful first year despite a late start, according to Roger Hook, resident manager. Hook says he expects the plant will operate 11 months next year.

* * * *

A new chemical to protect seeds stored now for planting next spring against decay and insect damage has been announced by Naugatuck Chemical Division, U. S. Rubber Co. The chemical is a combination of Spergon and DDT.

* * * *

Construction will begin soon on a one-story modern style office building at the General Mills soybean processing plant at Belmond, Iowa. The building will be under the immediate supervision of John S. Nail, office manager. It will be located in front of the present plant and face U. S. Highway 69.

* * * *

Fred J. Stark and George H. Slack, Peoria, Ill., have patented a process subjecting soy oil to nascent chlorine and nascent oxygen to give it drying properties.

* * * *

J. H. Caldwell, vice president of Ralston Purina Co., after 28 years with the company, has retired and has opened a brokerage business in St. Louis. He is a pioneer in the grain trade of the west and former president of the St. Louis Merchants Exchange.

* * * *

A new method of producing a light-colored non-break soybean oil has been patented by P. J. Julian and H. T. Iveson and assigned to the Glidden Co.

* * * *

Gilbert Dohrmann, feed line operator at Pillsbury's Feed and Soy division's Clinton, Iowa, feed mill, won a $100 cash award for an outstanding idea submitted by an employee. He suggested a more efficient way to handle many tons of feed ingredients daily.

* * * *

P. T. Pinckney, Sr., manager West Tennessee Soya Mill, Tiptonville, Tenn., went to Mayo Clinic, Rochester, Minn., for an operation, in July.

* * * *

Williams Grain & Milling Co., Sac City, Iowa, is installing a new French screw-press and drier in its processing plant, bringing the capacity up to three presses.

* * * *

The agricultural department of the Baltimore & Ohio Railroad has issued a new booklet on conservation designed to bring to the attention of agricultural interests in B & O territory the importance of water conservation.

* * * *

Big Four Cooperative Association, Sheldon, Iowa, is installing an additional French screw press unit, making three in all, in its soybean processing plant.

* * * *

Phoenix Oil Mill, Ridgely, Tenn., is completing a new eight press hydraulic plant this fall for operation on soybeans and cottonseed. Wynn Smith is manager and owner, Romea Henson superintendent. There will be storage for 12,000 tons of soybeans.

* * * *

Mineral oil is prohibited from use in foods by a new regulation passed by the state department of health in Texas. Any food product containing mineral oil as an ingredient will be considered adulterated.

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion $1.00.

WANTED — Late model, second-hand Expellers. Must be in first-class condition. Address KE, c/o Soybean Digest, Hudson, Iowa.

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YOUNG MAN 39 years old, married, one child, with exceptional experiences in plant operations, wholesale and brokerage of soybean and feed lines wishes to exchange his present position for sales or supervisory work. Address WH, care Soybean Digest, Hudson, Iowa.

—s b d—

Dr. J. J. Thonnard and Antoine Caulliez of Tourcoing, France, who have been in the States for the past several months, representing the French Government in investigating soy flour, spent several days with the Woodson-Tenent Laboratories, Memphis, Tenn., making tests with soybeans.

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WASHINGTON Digest

To Control or Not Control? The strategic importance of fats and oils in the national economy is well illustrated in the struggle over control or decontrol of the major farm-food commodity group of livestock-dairy-grain-soybeans-cottonseed.

Had it not been for fats and oils, which affect all the rest, the decision would have been easy for the Decontrol Board. The Fats and Oils Branch of the Department of Agriculture struggled hard to make a case for no controls, and failing, the case for decontrol of all the others in this controversial group was weakened.

If there must be ceilings on fats and oils, could grains escape? Could there be controls on lard, and not on hogs? And if hogs were put under ceilings, could cattle and sheep go free?

Furious debate has raged over these questions. Most officials have argued that you can't split—or shouldn't—a commodity group. Control one, control all. Fats and oils extend over into two other major commodity groups, not counting dairy. And so important are these relationships that it seemed for a time that the whole issue of food control would be decided by the decision on fats and oils.

DECONTROL BOARD IS UMPIRE

This has been the general political-economic decontrol situation: OPA, backed by the White House, has plugged for all but complete recontrol of farm and food commodities. The Department of Agriculture has wanted to decontrol practically everything except sugar. Secretary Anderson, lukewarm on price control all along, has been somewhat restrained by President Truman, who urged harmony between the chiefs of USDA and OPA. The Decontrol Board has been forced into the role of an umpire between these agencies, the trade, farm organizations, and consumer groups.

In trying to establish a case for decontrol of fats and oils, USDA played hardest the fact that copra imports are increasing fast. In late July they had reached three-fourths of prewar volume, and officials were hopeful that October imports would equal prewar. Even so, they admitted the world shortage of fats and oils would continue.

ROLE OF FISH MEAL

A small unexpected factor had a bearing in the deliberations. The new OPA law classified sea food and sea food products as agricultural commodities. Fish and fish meal were automatically recontrolled when the bill was signed. The difficulties arising out of having fish meal under control, and other protein meals out, strengthened the arguments of control advocates.

USDA is continuing the protein meal set-aside on a state distribution basis, rather than turning the job back to processors as had been anticipated earlier, it is announced.

The Bureau of Agricultural Economics sees continued tight supplies of fats and oils, both domestically and world wide, through most if not all of 1947.

Reduced acreages of soybeans and flaxseed this year mean a substantial reduction in vegetable-oil production the first 9 months of next year. Little relief is in sight from the 1946 cotton crop, for while estimated acreage is 3 percent above last year, it falls far short of the expected 10 percent increase.

Output of animal fats, excluding butter, may be reduced by 300 million pounds, the Bureau thinks. Next spring's hog slaughter is expected to be smaller than last spring.

By PORTER M. HEDGE
Washington Correspondent for The Soybean Digest

The big corn crop, and coming favorable corn-hog price ratio, may change farmers' intentions to reduce fall pigs saved by 17 percent under last fall. In spite of this possibility, lard and grease production next spring and summer is expected to decline.

World export supplies of oils and oilseeds is due to increase in 1947, yet still well below prewar. Gains are expected in exports of copra, coconut oil, and palm oil from the Pacific and Southeast Asia areas; tung oil from China; flaxseed and linseed oil from Argentina; and whale oil from the Antarctic.

But exports of soybeans from Manchuria, and of peanuts and flaxseed from India probably will stay substantially below prewar. European output of oils and fats won't recover greatly from the low levels of 1945 and 1946.

The office of Foreign Agricultural Relations reports much the same situation. Canadian 1946 flaxseed acreage is slightly less than 1 million acres compared to a goal of 1¼ million acres, but the outturn should about equal that of last year. Farmers' marketings the first 11 months of the last season amounted to 4.8 million bushels, compared to 7.1 million bushels the same months last season.

Argentine shipments of tallow and cattle fats for January-May this year totalled 47.5 million pounds, compared with 58.6 million pounds last year. The Belgian Congo expects an exportable surplus of palm oil in 1946 of about 106,000 short tons, compared to 84,800 tons in 1945, and the 1935-39 average of 73,000 tons.

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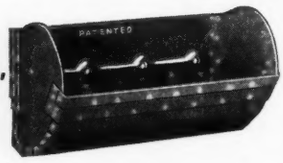

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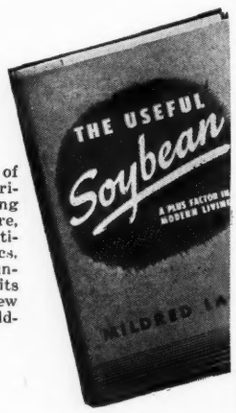

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In The MARKETS

• USDA PURCHASES OF FATS AND OILS. Purchases of fats and oils by the U. S. Department of Agriculture (including margarine, soap, and soybeans in terms of fat equivalent) amounted to 61 million pounds in March and 57 million pounds in April. The total for the first 4 months of 1946, at 212 million pounds, was about the same as the total for the corresponding period of 1945. Lard continues to be the leading fat purchased.

Contracts for Purchase of Oils and Purchases of Soybeans by the Department of Agriculture, 1942-46

Item	1942	1943	1944	1945	Mar.	1946 Apr.	Jan.-Apr.
			MILLION LBS.				
Soybeans (oil equival.) (5).	4	9	2	40	(4)	(4)	(4)
Soybean oil ...	17	22	100	7	5	1	9
Other vegetable oils ...	82	49	15	31			
Shortening ...	46	62	8	18			
Margarine (fat content (6) .	77	72	59	59			
			1,000 BU.				
Soybeans (7) .	400	983	206	4,496	2	1	15

(4) Less than 500,000 pounds. (5) Oil equivalent estimated at 9 pounds per bushel. (6) Fat content estimated at 80 percent for margarine; 55 percent for soap. (7) Excluding soybeans resold for crushing.

• ANALYSIS OF SOYBEAN PRODUCTS. A summary by Woodson-Tenent Laboratories for June.

Average Chemical Analysis of Soybeans Grown in Tennessee, Arkansas, Mississippi, Missouri

	Oil (Oil calculated to 14% moisture) %	Oil Yields per bushel * lbs.
Average	17.8	8.2
Month's highest	19.2	9.1
Month's lowest	17.0	7.7

Average Chemical Analysis of Soybeans Grown in Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Iowa, Kentucky, Virginia, Kansas, Nebraska

	Oil (Oil calculated to 14% moisture) %	Oil Yields per bushel * lbs.
Average	17.5	8.0
Month's highest	19.2	9.1
Month's lowest	15.6	6.8

Soybean Oil Meal — Average of All Soybean Oil Meal Analysis

	Moisture %	Oil %	Protein %	Standard
Average	13.34	4.69	42.58	56
Month's best	12.84	3.80	42.13	46

Analysis of Soybean Oil

	F.F.A. %	Gardner Break %	Moisture & Volatile %	Refining Loss %	Color (red)
Average	0.8	0.86	0.13	10.4	9.1
Month's best.	0.5	0.40	0.05	6.0	10.0

* Calculated 12.50% moisture and 5% oil left in meal.

• STANDARD SHORTENING SHIPMENTS. By members of Institute of Shortening Mfgrs., in pounds.

June 29 (corrected report)	4,198,033
July 6	5,217,319
July 13	7,007,624
July 20	6,456,593
July 27	7,250,964
August 3	7,234,136

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• STOCKS OF SOYBEANS. Soybean stocks in all positions on and off farms on July 1, 1946, totalled about 36½ million bushels, the Bureau of Agricultural Economics reported today. These stocks are smaller than on this date in any of the past 3 years. In compiling this total the BAE includes nearly 7 million bushels on farms and 3½ million bushels in interior mills, elevators, warehouses, and other establishments, as estimated by the Crop Reporting Board; another 3½ million bushels reported as commercial stocks at terminals by the Production and Marketing Administration; and nearly 23 million bushels at processing plants, as enumerated by the Bureau of the Census. Total stocks on July 1 a year ago were 46.4 million bushels compared with 48.0 million in 1944 and about 47.4 million bushels in 1943. Stocks were only 23.6 million bushels on July 1, 1942, the first date for which comparable data are available.

Disappearance of soybeans for the period April 1 to July 1, 1946, is indicated at more than 61 million bushels. Of this total about 40 million bushels were used by processors of oil. In the same quarter of 1945, disappearance was 63 million bushels, of which 42 million were processed for oil. From a total estimated supply of 199.5 million bushels on October 1, 1945, disappearance to July 1 this year is indicated at 163 million bushels, of which 125 million were processed for oil. This compares with disappearance of 158 million bushels in the period October 1, 1944 to July 1, 1945, of which 114 million were processed for oil. Since most of the 1946 soybean acreage was planted by July 1, the quantity still needed for seed out of stocks was relatively small. Even so, it is apparent that the April 1—June 30, 1946 rate of processing cannot be maintained in the ensuing 3 months before new crop soybeans become available, even if carryover stocks on next October 1 are to be reduced to a minimum.

STOCKS OF SOYBEANS, JULY 1, 1946, WITH COMPARISONS

Position	July 1, 1945	April 1, 1946	July 1, 1946
		Thousand bushels	
On Farms	7,587	29,785	6,780
Int. M.E. & Whses. *	6,031	18,177	3,526
Processing Plants	26,387	37,249	22,753
Terminal Markets	5,401	12,666	3,424
Steel and Wooden Bins	957	25	0
TOTAL ALL POSITIONS	46,363	97,902	36,483

STOCKS* OF SOYBEANS IN INTERIOR MILLS, ELEVATORS AND WAREHOUSES JULY 1, 1946, BY STATES, WITH COMPARISONS

State	July 1, 1945	April 1, 1946	July 1, 1946
		Thousand bushels	
Ohio	328	1,351	320
Indiana	440	2,486	290
Illinois	2,121	8,444	1,443
Michigan	10	110	15
Minnesota	51	339	43
Iowa	2,816	4,768	1,158
Missouri	88	169	68
Nebraska	1	8	4
Kansas	19	76	19
Virginia	2	21	13
North Carolina	4	81	5
Mississippi	1	25	11
Arkansas	1	27	7
Other States	149	272	130
U. S.	6,031	18,177	3,526

* Excludes stocks in processing plants enumerated by the Bureau of the Census and commercial stocks at terminals reported by the Grain Branch, Production and Marketing Administration.

FATS, OILS and OILSEEDS

By W. H. GOSS

Mr. Goss, one of the best known vegetable oil technologists in the field, was sent to Germany to report on the German oilseed industry. In this masterly 23-page mimeographed U. S. Government Report he tells of the Hansa-Muhle A. G., and Harburger Oelwerke Brinckmann und Mergell extraction plants. Full descriptions of processes, methods, machinery, etc., including valuable Cottonseed Oil chart. Particular emphasis on Soybeans. A most valuable Report for the Technical Library. Price is

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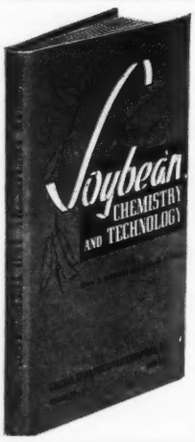

Soybean Chemistry and Technology . . .
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Principal Chemist, Southern Regional Research Laboratory; Formerly Senior Chemist, U. S. Regional Soybean Industrial Products Laboratory
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Senior Chemical Engineer, Northern Regional Research Laboratory; Formerly Senior Chemical Engineer, U. S. Regional Soybean Industrial Products Laboratory.
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• COMMERCIAL SOYBEAN STOCKS. Production and Marketing Administration's commercial grain stock reports for the last four weeks in July.

U. S. Soybeans in Stock and Afloat at Domestic Markets (1,000 bu.)

	July 9	July 16	July 23	July 30
Atlantic Coast	56	60	46	38
Gulf Coast				3
Northwestern and Upper Lake	346	313	313	313
Lower Lake	867	734	666	578
East Central	1,136	806	948	860
West Central Southwesten & Western	403	358	321	295
Total current week	2,808	2,271	2,294	2,087
Total Year ago	5,208	3,903	3,051	2,487

• SOYBEAN INSPECTIONS. Inspected receipts of soybeans continued light in June with a total of 2,025 cars compared with 2,182 cars in May, according to inspectors' reports to the Grain Branch of the Production and Marketing Administration. The average for the month of June for the crop years 1940-44 was 3,067 cars. Inspected receipts for October-June this season were 80,459 cars compared with 78,183 cars for the same period last season.

The quality of soybeans inspected in June continued good, 92 percent grading No. 2 or better compared with 93 per cent in May.

June inspections included the equivalent of about 28 cars inspected as truck receipts.

Government Orders

• OILSEED MEALS FOR FERTILIZERS. War Foods Order 105, Amendment 1, which has controlled the acquiring of oilseed meals for fertilizer purposes during the period July 1, 1945, to June 30, 1946, was terminated by the Department of Agriculture, but restrictions upon the acquisition or use of edible oilseed meals for fertilizer purposes during the 1946-47 season were provided in an amendment to War Food Order 9, the U. S. Department of Agriculture reported.

The continued tight supply of protein meals for feeding purposes requires continued restrictions on the quantity of edible oilseed meals which can be used for fertilizers and the prohibition of delivery or receipt of such meals for fertilizer prior to September 1, 1946, as provided in the amendment to War Food Order 9. The amendment does not, however, forbid the making of contracts prior to September 1, 1946, for the delivery of edible oilseed meal for fertilizer purposes after that date.

WFO-9 also directs that edible oilseed meal acquired for use as fertilizer be used in areas and on crops where such meals had previously been used.

• OLIVE OIL RESTRICTED. Edible olive oil, which was removed from controls on July 5, 1944, is again being placed under import restrictions because of the shortage of this commodity in the United States, according to announcement of the U. S. Department of Agriculture. The oil, now being obtained in exchange for soybean oil, which is under international food allocation, is badly needed in this country, and import controls are considered necessary to prevent its re-export.

• PROTECTIVE COATINGS. The Department of Agriculture announced the suspension of War Food Order 42a, which has controlled the use of fats and oils in the manufacturing of protective coatings of floor coverings, and coated fabrics since October 1, 1942.

The suspension of this order was decided upon after discussion with the industries controlled by the order as well as other interested government agencies. The suspension is in line with the practically unanimous recommendation of members of such industries.